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ANTHROPOLOGY.—*Glossary of names used in colonial Latin America for crosses among Indians, Negroes, and Whites.*[1]

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Society in colonial Spanish and Portuguese America was divided into several groups, each of which had its own privileges and social position. First and foremost were the *chapetones*[2] or *gachupines*[3] or the Spaniards from Spain, to whom the important government and church positions were usually given. Next were the *criollos*,[4] who were those born in the colonies of European or Spanish parents. The Indians, the Negroes, who were often slaves, and the offspring of the mixing of these races—White, Indian, and Negro—were the other important groups of this diversified society.

This brief note is not interested in the superior position occupied by the first two classes of society mentioned above, nor will it be attempted here to trace the reasons for the antagonisms, which existed between the *gachupines* and the *criollos*. Excellent studies already exist dealing with the history and position of the Indian[5] and Negro[6] in colonial society, and there seems to be no reason to review these facts even briefly.

Yet only a few studies have appeared that have attempted to define or explain the various designations applied to the offspring of racial mixtures.[7] It is interesting, though confusing, to note that these terms vary from region to region, century to century, and that the same word can have a variety of meanings, which might then cause one to agree with Aguirre Beltrán (1946, p. 177) that these "erudite classifications had the defect of being unintelligible and impracticable, as the logical product of minds filled with affectation." However, these terms cannot be ignored, for they appear in Spanish and Portuguese works, written since the sixteenth century, as well as in the works of Humboldt, Mantegazza, and other foreigners who have written of their travels in Spanish and Portuguese America. It shall, therefore, be the purpose of this

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[2] The origin of *chapetón* is still an undecided matter, though all would accept the definition "the European or Spaniard, who has recently arrived in the New World." The word was evidently first used at the beginning of the seventeenth century and was more commonly used in South America than in Spanish North America, where the term *gachupín* was more frequent.

[3] The bibliography of *gachupín* or *cachupín* is enormous; authorities differ on whether it is derived from the Portuguese, *cachopo*, or from the Aztec words *cactli* and *tzopinia*, which mean in the contracted form "he who pricks with or wears spurs." The present writer can only state that the majority of some 30 studies consulted favor the Aztec derivation of the word.

[4] The word *criollo* was introduced to Spanish America by Negro slaves and is to be found in the works of Garcilaso de la Vega, el Inca, early in the seventeenth century. The *Dic. leng. esp.* (1947, p. 369) notes that the word has the following meanings: (1) "Offspring of European parents, no matter where born," (2) "Negro born in America in contrast to the one born in Africa," (3) "Used to designate Americans, the offspring of Europeans." In Spanish America the last of these three meanings is the most frequent one.

[5] For a bibliography on this subject see Haring (1947, pp. 360–362).

[6] The volumes by Saco (1938), Aguirre Beltrán (1946), Ramos (1943), Tannenbaum (1947), and Freyre (1946) are useful for the study of the Negro in this hemisphere. Haring (1947, pp. 362–363) gives a very short bibliography, while the *Journal of Negro History* and *Phylon* can often be consulted with profit.

[7] The historian usually uses the word *caste* to designate the offspring of these racial mixtures. See the studies by Nicolas León and Laureano Vallenilla Lanz listed in the bibliography. The White, Indian, and Negro races are the only ones here considered, though it is true that a few Chinese are to be found in Mexico as early as the first part of the seventeenth century.

glossary to define well over a hundred terms denoting racial mixture; most of these are Spanish, a few are Portuguese, though studies on this subject in Portuguese appear to be rather rare.[8]

One must make a few general remarks about the number of individuals who were the product of racial mixture. Humboldt (1941, 2: 30–31) notes that in Spanish America, as a whole, 45 percent of the population was Indian; 42 percent was composed of mixed races; 19 percent of members of the White race; and 4 percent of Negroes. He and Bonpland[9] estimated the population of Venezuela at the beginning of the nineteenth century at 800,000; of which 12,000 were *chapetones;* 200,000 *criollos;* 406,000 persons of mixed races; 62,000 Negro slaves, and 120,000 Indians. In other words, more than half of the Venezuelan population was composed of mixed races.

In regard to New Spain, or Mexico, Aguirre Beltrán (1946, especially p. 237) has conclusively shown, from a study of the various historians, censuses, and other data, that the percentage of the White and Negro population remained almost stationary and that the population formed of racial mixtures constantly grew. His tables show that the racial mixtures formed 0.44 percent of the population in 1570; 22.6 percent in 1646; 36.6 percent in 1742; 38.7 percent in 1793; and 39.5 percent in 1810.

The above statistics are indicative of the numerical position of these mixed groups, though it is true that in Brazil the proportion might have been higher than the 42 percent mentioned above, but in Chile and the Río Plata area, for a variety of historical reasons, the proportion of inhabitants offspring of racial intermarriage was correspondingly smaller.

The various racial mixtures were considered to possess different physical and moral characteristics. Alcedo (1786–89, 5: 184) notes that the *zambo* was the group most scorned because of the perverse customs of its members; while Humboldt (1941, 2: 140) notes that the *mulatos* are distinguished by the violence of their passions and by a peculiar talkativeness. Viceroy Enríquez in the sixteenth century states that the *mulatos pardos* have the three following characteristics: Great fecundity, outstanding strength, and cleverness. He finds that the *mestizos* are, on the whole, well behaved, agile, and courageous. The Spanish writers of the colonial period had no respect at all for the Negro and for the racial mixtures formed from the union of Negro and Indian. They were called lazy, vile, insolent, and other insulting names, which later came even to be applied to the *mulatos* and *mestizos* "because they are universally so evilly inclined." However, after Mexico became independent, Lucas Alamán[10] wrote that "these castes, defamed by the laws, condemned by prejudice, were nevertheless the most useful portion of the population."

Space forbids the listing of the so-called characteristics of each racial group. The racial mixtures were plagued with the same diseases which carried off so many Indians and Negroes. Smallpox, dysentery, *matlazahuatl*[11] and other diseases identifiable only with difficulty made enormous inroads on the population. The Indian, Negro, and racial mixtures appear to have been able to resist malaria and yellow fever to a much greater degree than the White element of the population.[12]

Passing from one group to another was carefully watched, though at the end of the viceroyalty in Mexico members of certain of the racial mixtures passed to the *criollo* and Indian groups. It is impossible here to study the economic, social, and legal reasons which would cause an individual to prefer to be a member of one caste rather than another. Suffice it to mention that the *mulatos* were subject to the payment of tribute and a head tax, while the *mestizos* were exempt from these taxes (Aguirre Beltrán, 1946, pp. 154, 172).

[8] Aguirre Beltrán (1946, p. 178) notes that "the Brazilian classification ought to have been as complicated as that used in the Spanish colonies; nevertheless, there does not exist a systematic study of Brazilian nomenclature."

[9] Quoted by Baralt (1939, p. 361).

[10] Quoted by Aguirre Beltrán, p. 190.

[11] The identification of *matlasahuatl* has aroused great controversy. The writer purposely refrains from presenting a 2-page bibliography on the subject and desires only to point out that the majority of the recent writers such as Aguirre Beltrán (1946) and Ashburn (1947) identify it as typhus.

[12] These two paragraphs have been based on chapter 10 of Aguirre Beltrán (1946).

No detailed studies have been found concerning the social position of the individual castes. Haring (1947, p. 218) notes that "free *mulatos* and *zambos* were regarded as peculiarly inferior" and that they were forbidden to appear on the streets after dark, carry arms, have Indians as servants, hold public office or be admitted to the craft guilds; Laureano Vallenilla Lanz (1921, p. 113) remarks that members of the castes could not be lawyers, priests (this applied especially to the *pardos*), or members of the religious orders, nor could they wear jewels, silks, or laces or use carpets in the churches, swords, pistols, or umbrellas; Millau (1947, pp. 42–43) states that the Negroes and *mulatos* were, for the most part slaves and that they served as water carriers; as for the Indians and *mestizos*, their occupations were working in the brick kilns and serving on the ranches and as cartmen. At the end of the colonial régime certain of these groups were permitted to serve in the militia.

The glossary that follows is based on the terms denoting the offspring of racial mixture to be found in the various volumes mentioned in the bibliography as well as in a series of tables or collections of portraits to be found in various museums and reproduced by a number of authors.

Lack of space forbids the reproduction of the 15 tables[13] that have been gathered. However, the *Colección Larrauri Montaño* is as follows:

Father	*Mother*	*Offspring*
Spanish[14]	India	Mestizo
Spanish	Mestiza	Castizo
Spanish	Castiza	Spanish
Spanish	Negra	Mulato
Spanish	Mulata	Morisco
Spanish	Morisca	Albino
Spanish	Albina	Torna atrás
Spanish	Torna atrás	Tente en el aire
Indio	Negra	Cambujo
Chino cambujo	India	Lobo
Lobo	India	Albarazado
Albarazado	Mestiza	Barnocino
Barnocino	India	Sambaigo
Mestizo	Castiza	Chamizo
Mestizo	India	Coyote

No attempt has been made to deal with the various nicknames which were applied only to the Spaniards in the different parts of America, and the Portuguese portion of the glossary is decidedly weak in its nomenclature. The Spanish portion of the glossary is more complete than any of the attempts of this type that have preceded it. Though the glossary is composed chiefly of terms recorded as having been used in Mexico, the writer has attempted to list the other areas in which the word was used, if and when the word was found among the authorities studied.

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[13] The *Colección Riva Palacio:* Humboldt (1941, 2: 113); León (1924, 47–48); Espasa (34: 1090–1094); Aguirre Beltrán (1946, pp. 175–176).

The *Colección del museo nacional de México:* Humboldt (1941, 2: 113–114), Leon (1924, pp. 42–47); Aguirre Beltrán (1946, pp. 176–177).

The *Colección Larrauri Montaño:* Aguirre Beltrán (1946, p. 176); León (1924, p. 41).

Flores (1886–1888, 2: 407) reproduces the table in *México a través de los siglos* (2: 472).

León (1924, pp. 39–40) gives the titles of the *Colección Magon*, while five other tables are to be found in his book: pp. 37–38; 40–41; 58–66; 29, 9.

Saco (1938, 2: 68) reproduces Gumilla's table (n.d., p. 85); another table is to be found in Gumilla (n.d., pp. 86–87).

Saco (1938, 2: 66–67) reproduces Unanue's tables (1940, pp. 50–51).

Jaime Jaramullo-Arango (1948) gives a brief list of 12 racial mixtures.

The Espasa enciclopedia (n.d., 34: 1094) presents information from which a table of Brazilian nomenclature could be formed, and Aguirre Beltrán (1946, pp. 177–178) reproduces Saint Méry's French table.

Humboldt (1941, 2: 142) also gives a short table.

[14] The above is an exact reproduction of the table, except that the word *español* has been translated by *Spanish*. *Barnocino* is probably another spelling for *barcino* and has so been treated in the glossary.

GLOSSARY

Term	Used in	Father	Mother	Remarks	Sources
Aça	Brazil	Negro	White	Another term for *mulato claro*	Ramos-Vivó, 350; Freire, 1: 94.
Ahí te están (or Allí te están)	Mexico	Coyote	Mestiza		Santamaría, 1: 64; Espasa, 34: 1003; León, 21.
"	"	Coyote-mestizo	Mulata		Colección Riva Palacio.
"	"	No te entiendo	Indian		Flores, 2: 407
Albarasado (or albarrasado alvarasado)	"	Cambujo	Mulata		Santamaría, 1: 74.
"	"	"	White		"
"	"	"	Indian		"
"	"	Tente en el aire	Mulata	25 percent White; 40.6 Indian; 34.4 Negro	Santamaría, 1: 74; León, 21.
"	"	Chino	Genizara		Santamaría, 1: 74; *Dic. hist. leng. esp.*, 1: 376; *Dic. leng. esp.*, 48.
"	"	Zambaigo	Indian		Espasa, 34: 1094.
"	"	Gíbaro	Mulata		Aguirre Beltrán, 176–177.
"	"	Lobo	Indian		Colección Larrauri Montaño.
"	"	Gíbaro	Indian		Flores, 2: 407; León, 9.
Albarazado	"	Coyote	Morisca		Colección Magon.
Albino	Mexico, Brasil, Santo Domingo	Morisco	White		Espasa, 34: 1094; Santamaría, 1: 75; *Dic. hist. leng. esp.*, 1: 383; *Dic. leng. esp.*, 50; León, 21.
"	Mexico	Negro	Negro	Negro born White	Malaret, 82.
"	Brazil	"	White	"Incorrect" designation for Brazilian *mulato*	Ramos-Vivó, 335.
Ariboco	Brazil	"	Indian		Saco, 2: 65.
Araçuaba	Bahia, Brazil	"	White	Regonal term for *mulato claro*	Ramos-Vivó, 350.
Barcino (or barcina, barsino barquina)	Mexico	Albarasado	Mulata		Espasa, 34: 1094; Santamaría, 1: 189.
"	"	"	Indian	12.5 percent white; 70.3 Indian; 17.2 Negro	Santamaría, 1: 189; León, 21.
"	"	"	White		Santamaría, 1: 189.
"	"	"	Mestiza		Colección Larrauri Montaño.
"	"	Gíbaro	Loba		Santamaría, 1: 189.
Bujamé	Ceara, Brazil	Negro	White	Regional term for mulato *claro*	Ramos-Vivó, 364.
Caboclo	Brazil	White	Indian	11 percent of the Brazilian population	*Gran. enc. port. bra.*, 5:278; Ramos-Vivó, 364–365; Freyre, 49, 67, 481
"	"	Indian	Negro		Freire, 2: 1131; Santamaría, 1: 248
Caboré	Brazil, especially the Sierra del Norte region	Negro	Indian		Freire, 2: 1131; Ramos-Vivó, 365; Freyre, 481; *Gran. enc. port. bra.*, 5: 279.
Caboverde	Brazil	"	"		Ramos-Vivó, 335.
Cabra	"	"	Mulata		*Gran. enc. port. bra.*, 5: 297; Freire, 2: 1132; León, 21; Espasa, 34: 1094.
"	"	"	White	Sometimes applied to *mulato*	Ramos-Vivó, 335, 365.
Cabre	"	"	Mulata		Santamaría, 1: 248.
Cabrocha	"			Feminine dark-skinned mestizo type	Freyre, 481.
Cafuz (or cafuso, cafuso)	"	"	Indian		Freire, 2: 1152; Freyre, 481; Ramos-Vivó, 365; Espasa, 34: 1093; Santamaría, 1: 264; *Gran. enc. port. bra.*, 5: 400.
"	"	"	Mulata		Freire, 2: 1152.
Calpamuato	Mexico	Zambaigo	Loba		Santamaría, 1: 276.
"	"	Mulato	Mestiza		"
"	"	"	Zamba		Flores, 2: 407.
"	"	Barcino	Indian	6.25 percent White; 85.15 Indian; 8.6 Negro	León, 22; Santamaría, 1: 276; Espasa 34: 1094.
"	"	Mulato	"		Colección Magon.
"	"	Sambaygo	Mulata		León, 9.
Calpamulo	"	Albarasado	Negro		Santamaría, 1: 276; *Dic. leng esp.*, 224; *Dic. hist. leng. esp.*, 2: 537
Cambujo	"	Lobo	Indian		Santamaría, 1: 281.
"	"	Chino	"	62.5 percent Indian; 37.5 Negro.	León, 21–22.
"	Río de la Plata region	Negro	"		Malaret, 197.
"	Mexico	"	"		*Dic. hist. leng. esp.*, 2: 564.
"	"	"	Albarasado		Santamaría, 1: 281.
"	Oaxaca, Mexico	"	White	Regional term for mulato *pardo*	Aguirre Beltrán, 160.

Term	Used in	Father	Mother	Remarks	Sources
Cambujo	Mexico	Zambaigo	Mulata		Santamaria, 1: 281.
"	"	"	China		*Dic. hist. leng. esp.*, 2: 564; *Dic. leng. esp.*, 229.
"	Various regions			Anyone with a dark complexion	Santamaria, 1: 281; Malaret, 197; *Dic. hist. leng. esp.*, 2: 564.
Caribocа	Brazil	White	Indian		Freyre, 483.
Carafuso	"	Negro	"		Ramos-Vivó, 335.
Castizo	Spanish-America	Mestizo	White		Malaret, 226; León, 22; Espasa, 12: 346; 34: 1093; *Dic. leng. esp.*, 269; *Dic. hist. leng. esp.*, 2: 854.
"	Brazil	"	Indian		Santamaria, 1: 334; Espasa, 34: 1094.
Castizo cuatralvo	Mexico	Mestizo	White		León, 22.
Cobrizo	Brazil	White	Indian		Ramos-Vivó, 366.
Cocho	Michoacán, Mexico			Regional term for *mulato pardo*	Aguirre Beltrán, 169.
Coyote	Mexico	Mestizo	"	25 percent White; 75 Indian	León, 22; Espasa, 15: 1447.
"	"	"	Cuarterón		Espasa, 15: 1447.
Coyote	"	Mulato	Barcina		"
"	"			Used for *mestizo pardo* and *mestizo blanco*	Aguirre Beltrán, 171.
Coyote-mestizo	"	Chamizo	Mestiza	36.3 percent White; 52.7 Indian; 11 Negro	León, 22.
Cuarterón	Spanish-America	White	Mestiza		Macías, 392; Malaret, 271; Saco, 2: 66; Unanue, 50; Santamaria, 1: 419; *Dic. leng. esp.*, 376.
"	Especially Cuba	"	Mulata		Ramos-Vivó, 367; Malaret, 271; Macías, 392; Santamaria, 1: 419
"	Colombia, Mexico, Brazil	"	Tercerona	87.5 percent White; 12.5 Negro	León, 22; Espasa, 34: 1094; Ulloa, 1: 30.
"	Mexico	Mulato	Mestiza		Colección Magon.
Cuarterón de chino	"	White	China	56.25 percent White; 6.25 Indian; 37.5 Negro	León, 22; Santamaria, 1: 419.
Cuarterón de mestizo	"	"	Mestiza	75 percent White; 25 Indian	"
Cuarterón de mulato	"	"	Mulata	75 percent White; 25 Negro	Santamaria, 1: 419.
"	"	Cambujo	China		León, 22.
Cuarterón de salta atrás	"	Tercerón	Negro		Santamaria, 1: 419; Espasa, 34: 1094.
Curiboca	Northern Brazil	White	Indian		Freyre, 483.
Chamizo (or chamizo)	Mexico	Coyote	Indian	22.6 percent White; 55.5 Indian; 21.9 Negro	León, 22; Santamaria, 1: 461.
"	"	Mestizo	Castiza		Colección Larrauri Montaño.
Chino	"	Indian	Zamba		Lenz, 1: 295; *Dic. leng. esp.*, 399.
"	Mexico	White	Morisca		Espasa, 17: 521.
"	Mexico, Cuba	Lobo	Negro	25 percent Indian; 75 Negro	Espasa, 17: 521; Santamaria, 1: 510. León, 22–23.
"	Cuba	Mulato	"		Malaret, 327; *Dic. leng. esp.*, 399; Santamaria, 1: 510.
"	Mexico	Salto atrás	Indian		Flores, 2: 407; León, 9; Espasa, 17: 521; Santamaria, 1: 510.
"	Peru	Mulato	"		Santamaria, 1: 510.
"	Argentina, Uruguay, Paraguay			Used for *mestizo*	Malaret 327; Mantegazza, 50; Santamaria, 1: 510.
"	Argentina	Negro	Indian		Santamaria, 1: 510; Espasa, 17: 521.
"	"	"	White		Santamaria, 1: 510; Espasa 17: 521.
Chino-cholo	Peru	"	Indian		Malaret, 327.
Cholo	Costa Rica			Indian or any dark individual	Malaret, 340; Santamaria, 1: 531.
"	Peru			Mestizo, with Indian features predominant	"
"	Chile, Peru, Ecuador, Bolivia, Argentina	Indian	White		*Dic. leng. esp.*, 401; Espasa, 17: 608; Malaret, 327; Lenz, 1: 311; Granada, 199; Roman, 2: 49.
Cholo-chino	Peru	Negro	Chinese or other oriental		Santamaria, 1: 531.
Español	Mexico	White	Castiza		Colección Larrauri Montaño.
"	"	"	Quinterona de mestizo	Sometimes used for *requinterón de mestizo*	León, 37–38.
"	"	Quinterón de mulato	Requinterona de mulato		"
Galfarro	"	Negro	Mulata	25 percent White; 75 Negro	León, 23.
Genisaro	"	Barcino	Zambaiga	17.975 percent White; 72.65 Indian; 9.37 Negro	León, 23; Espasa, 34: 1094; Santamaria, 2: 26.
Gente blanca	"	White	Requinterona de mulata	96.87 percent White; 3.13 Negro	León, 23.

Term	Used in	Father	Mother	Remarks	Sources
Gíbaro	Mexico, Puerto Rico	Albarazado	Calpamulo		Espasa, 34: 1094; Santamaría, 2: 145-146; *Dic. leng. esp.*, 744.
"	Mexico	"	Grifa		Espasa, 34: 1094.
"	"	Lobo	China	67.19 percent White; 12.5 Indian; 20.31 Negro	León, 23.
"	"	"	Mulata		León, 9.
"	"	Chino	"		Flores, 2: 407.
"	"	Calpamulato	Indian		Colección Magon.
"	"	Zambo	Grifa		Espasa, 34: 1094.
Grifo	"	Lobo	Indian	30 percent White; 20.7 Indian; 49.3 Negro	León, 23; Espasa, 34: 1094.
"	"			Used for *mulato*	Aguirre Beltrán, 177–178.
"	West Indies			Used to designate a colored person	Malaret, 440.
Harnizo	Mexico	Coyote	White	82.4 percent White; 12.5 Indian; 3.1 Negro	León, 23; Espasa, 34: 1094; Santamaría, 2: 90.
Hay te estás	"	No te entiendo	Indian	59.38 percent Indian; 15.62 White; 25 Negro	León, 9, 23.
Indio alobado	"	Mulato alobado	"		Aguirre Beltrán, 170.
Jagunço	Northeast Brasil			*Cabocle* with Negro blood	Ramos-Vivó, 373.
Jarocho	Veracrus, Mexico			Applied to *mulato pardo*	Aguirre Beltrán, 169; 178–179.
"	Mexico	Negro	"		León, 23–24.
Jíbaro (see Gíbaro)					
Ladino	Parts of South America	White	"		Boudin, quoted by Mantegazza, 50.
"	Central America; Tabasco, Mexico	"	"	Used for *mestizo*	Malaret, 498; Santamaría, 2: 168.
"	Mexico			Used by Indians to designate *mestizos* or Whites	Malaret, 498.
Limpio	"	White	Gente blanca	99 percent White; 1 Negro	León, 24.
Lobo	"	Negro	Indian		Espasa, 30: 1244; Ramos i Duarte, 337; Espasa, 34: 1094; León, 24.
"	"	Torna atrás	"		Colección Riva Palacio
"	"	Mulato	Salta atrás		Colección del museo nacional de Mexico.
"	"	Chino cambujo	Indian		Colección Larrauri Montaño.
"	"	Chino	Mulata		León, 9.
Lobo torna atrás	"	Lobo	Indian		Santamaría, 2: 189.
Loro	Chiapas, Mexico			See *mulato pardo*	Aguirre Beltrán, 169.
Mameluco	Brasil	White	"		Saco, 2: 65; Freyre, 489; Espasa, 34: 1092, 1095.
"	"			Generic term for every type of racial mixture	Freyre, 489.
Mestizo	Spanish and Portuguese America	"	"		León, 24–25; any of the dictionaries and encyclopedias.
"	Cuba	"	Negro	Used instead of *mulato*	Ramos-Vivó, 377.
"	Río de la Plata region			Generic term which includes the *zambo*, *chino*, and the *mulato*	Mantegazza, 50.
Mestizo blanco	Mexico	"	Indian		Aguirre Beltrán, 170–171
Mestizo castizo	"	Mestizo blanco	White		Aguirre Beltrán, 171.
Mestizo claro	Brasil	White	Indian (Caribe)		Espasa, 34: 1094.
"	"	"	Mestiza		"
Mestizo pardo (or mestizo amulatado)	Mexico	Mestizo blanco	Mulata parda		Aguirre Beltrán, 171.
Mestizo prieto (or mulato amestizado)	"	"	Negro		"
Mestindio	"	"	Indian	25 percent White; 75 Indian	Aguirre Beltrán, 172; León, 24.
"	"	Mestizo	"		León, 58.
Mocorongo	Interior of Brasil	Negro	White		Ramos-Vivó, 377.
"	"	"	Indian		"
Morisco	Mexico	Mulato	White	75 percent White; 25 Negro	*Dic. leng. esp.*, 866; León, 25; Ramos-Vivó, 377; Santamaría, 2: 299.
Mulato	Cuba	White	Mulata		Santamaría, 2: 314.
"	Peru	"	Zamba		"

Term	Used in	Father	Mother	Remarks	Sources
Mulato	Argentina, Brazil, Mexico, etc.	Negro	White		Mantegazza, 50; Ramos-Vivó, 377; Macías, 875; *Dic. leng. esp.*, 876; Espasa, 37: 216; Aguirre Beltrán, 153, 167–170; Santmaría, 2: 314; León, 25; Alcedo, 126; Freire, 4: 3525.
"	Dominican Republic	Mulato	Mulata		Santamaría, 2: 314.
Mulato blanco	Mexico	Negro	White		Aguirre Beltrán, 167.
Mulato claro	Brazil	Negro with Semitic or Hamitic blood	"		Ramos-Vivó, 334.
Mulato lobo	Mexico	Mulato pardo	Indian		Aguirre Beltrán, 170.
Mulato morisco	"	Mulato blanco	White		Aguirre Beltrán, 167.
Mulato obscuro	"	Mulato	Indian	25 percent White; 25 Negro; 50 Indian	León, 25.
Mulato pardo	"	Negro	"		Aguirre Beltrán, 160.
Mulato prieto (or mulato anegrado)	"	"	Mulata parda		Aguirre Beltrán, 168–9.
Mulato tornatrás	"	Mestizo	Mulata		Espasa, 34: 1094; Santamaría, 2: 314.
Muxuango	Coastal Brasil	White	Tupí and Tapuyas Indians	May occasionally be part Negro	Ramos-Vivó, 377.
No te entiendo	Mexico	Tente en el aire	Mulata		León, 25, 9; Santamaría, 2: 335; Espasa, 34: 1093.
Octavón (or ochavon, octarón)	Mexico, Venezuela, Cuba	White	Cuarterona	87.5 percent White; 12.5 Negro; last two sources limit word's use to Cuba.	León, 25; Ramos-Vivó, 379–380; Saco, 2: 68; Gumilla, 85; Malaret, 597; Espasa, 39: 669; *Dic. leng. esp.*, 905.
Pardo	Cuba	"	Mulata		Macías, 935.
"	Brazil	Indian	"		Santamaría, 2: 411.
"	Argentina, West Indies, Brazil	White	Negro	Used for *mulato*, which has an unpleasant connotation for some people	Santamaría, 2: 411; Malaret, 634; Ramos-Vivó, 381; Espasa, 34: 1093–4 Freire, 4: 3820.
"	Brazil, Cuba, Puerto Rico	"	Indian	General designation for *mestizo* and colored individuals	Santamaría, 2: 411; Ramos-Vivó, 381, *Dic. leng. esp.*, 947.
Pardavasco	Brasil	Negro	"		Santamaría, 2: 411.
"	"	"	Mulata		Freyre, 493.
"	"	"	White	See *mulato*	Freire 4: 3820.
Paróara	"	Indian	"	*Cabocle*, who migrated north	Ramos-Vivó, 381.
Postizo	Mexico	Castizo	"		Santamaría, 2: 520; Espasa, 34: 1093; León, 25.
Puchuel	"	"	"		Espasa, 34: 1093.
"		Postizo	"		"
"		Mestizo	"		Santamaría, 2: 528.
Puchuela	Mexico	Octavón[15] indio	"	93.75 percent White; 6.25 Indian	León, 25.
"	Venezuela	Ochavón	"	All white, in regard to color	Gumilla, 85; Saco, 2: 68.
Puchuela de negro	Mexico	Octavón[16] Negro	"	93.75 percent White; 6.25 Negro	León, 25.
Quinterón	Mexico	White	Cuarterona		Santamaría, 2: 553; Malaret, 695.
"	"	"	Tercerón negra[17]	87.5 percent White; 12.5 Negro	León, 26.
Quinterón de mestizo	"	"	Castiza		Espasa, 34: 1093.
"	"	"	Cuarterona de mestizo	87.5 percent White; 12.5 Indian	León, 26.
Quinterón de mulato	"	"	Morisca		Espasa, 34: 1093.
"	"	"	Cuarterona de mulato		León, 26, 37–38.
Quinterón salta atrás	"	Cuarterón	Negro		Espasa, 34: 1094.
Requinterón	"	White	Quinterona		Santamaría, 3: 31.
Requinterón de mestizo	"	Quinterón de de mestizo	Requinterona de mestizo	93.75 percent White; 6.25 Indian	León, 26.
"	"	"	White		León, 37–38.
Requinterón de mulato	"	Quinterón de mulato	Requinterona de mulato	93.75 percent White; 6.25 Negro	León, 26.
Salta atrás (sometimes written salto atrás)	"	Chino	Indian	*Torna atrás* more common in Mexico	Santamaría, 3: 60.

[15] Though none of the sources consulted discuss this mixture as a separate term, it is obvious that it is 12.5 percent Indian and 87.5 percent White.
[16] *Octavón negro* is a more accurate way of expressing *octavon*, i.e., an individual 87.5 percent White; 12.5 percent Negro.
[17] This term does not appear to be discussed in the sources consulted; a tercerón Negro would be an individual 33.3 percent Negro and 66.7 percent White.

Term	Used in	Father	Mother	Remarks	Sources
Salta atrás	Mexico, Peru, Cuba	Cuarterón	Mulata	An individual whose parents are seemingly White, but who reveals by his color, skin, or features that in his remote ancestry there existed some Negro blood (Macías)	Alcedo, 164; Macías, 1074.
"	Mexico	White	Albina	95.75 percent White; 4.25 Negro	León, 26.
"	Venezuela	Indian	Mestiza	The offspring is so-called, "because instead of advancing somewhat (i.e., in whiteness), it goes backward to a great or lesser degree."	Gumilla, 85.
				So called "because instead of increasing its color, it goes backward; and the same 'throw back' occurs when the Indian and Negro races are mixed."	Saco, 2: 69.
"	Mexico	White	White	Offspring with the characteristics of a Negro	Flores, 2: 407.
Salta atrás cuarterón	"	Negro	Tercerona	62.5 percent Negro; 37.5 White	León, 26.
Salta atrás quinterón	"	"	Cuarterona	43.75 percent White; 56.25 Negro	"
Sambayo (or sambaigo, sambahigo)	"	Cambujo	Indian	23.45 percent White; 75 Indian; 1.55 Negro	"
Saraça	Brazil			See *mulato claro*	Ramos-Vivó, 383.
Sarará	"			"	"
"	"			Light-colored Negro with kinky hair	Freyre, 407.
Septerón		White	Negro	12.5 percent White; 87.5 Negro; term coined by Saco	Saco, 2: 67.
Tapanuna	"	Cafuso	"		Espasa, 34: 1004.
Tapuio	"	Civilized Indian	"		Ramos-Vivó, 385.
Tente en el aire[18]	Peru	Cuarterón	Cuarterona		Alcedo, 172.
"	"	Mulato	Mulata		"
"	"	Mestizo de indio	Mestiza de india		"
"	Mexico	White	Torna atrás		Colección Laurrauri Montaño.
"	"	Calpanmulato	Sambaygo		León, 9.
"	"	"	Cambuja		Santamaría, 3: 155.
"	"	Indian	"	81.25 percent Indian; 18.75 Negro	Santamaría, 3: 155; León, 26.
"	"	"	Loba		Santamaría, 3: 155.
"	"	White	Requinterona		"
"	"	Gíbaro	Albarazada		Santamaría, 3: 155; *Dic. leng. esp.*, 1209.
"	"	Zambo	Calpamulata		Espasa, 34: 1003.
"	"	Salta atrás	Albarazada		Colección Magon.
"	"	Cuarterón	Mulata		*Dic. leng. esp.*, 1209.
Tercerón	Colombia, Mexico	White	"		Espasa, 60: 1164; Ulloa, 1: 29.
Tercerón (or *cuarterón cuatraluo*)	Brazil	"	"		Santamaría, 3: 161; Espasa, 34: 1003.
Tornatrás[19] (or torna atrás)	Mexico	No te entiendo	Indian		Santamaría, 3: 204.
Torna atrás	"	White	Albina		Santamaría, 3: 204.
"	"			Used for *salta atrás*	Alcedo quoted by León, 26.
Tresalbo (or tresavo)	Mexico, Peru	Mestizo	Indian	More common in Peru	Santamaría, 3: 216; Espasa, 34: 1003; Aguirre Beltrán, 177; León, 26.
Xíbaro	Brazil	Cafuso	Negro		Ramos-Vivó, 387.
"	"	Caribocs	"		"
"	"	Cabord	"		Freire, 5: 5246.

[18] The comment of Alcedo (p. 172) accords with that of Saco (2: 69) who writes: "When a *mestizo* has offspring by a *mestiza* the offspring is *mestizo* too, and it is commonly called *tente en el aire*, because it neither advances nor retrogresses" (i.e., in color). Gumilla (p. 85) also advances the above idea as to the expression's origin.

[19] "*Torna atrás* implies a regression to Negro features in the offspring of the racial mixture, which modern investigations have demonstrated to be absolutely without basis" (Aguirre Beltrán, 177).

Term	Used in	Father	Mother	Remarks	Sources
Zambaigo (or zambaygo, zambayo, zambo de indio, zambaloo, zambaigo)	Mexico	Chino	Indian		Santamaria, 3: 309; Espasa, 70: 917; *Dic. leng. esp.*, 1316.
"	"	Lobo	"		Colección Riva Palacio.
"	"	Cambujo	"		León, 9; Flores, 2: 407.
"	"	Barnocino	"		Colección Larrauri Montaño.
Zambo	Spanish and Portuguese America	Negro	"		Espasa, 70: 920; Mantegazza, 50; Malaret, 829; Santamaria, 3: 309; *Dic. leng. esp.*, 1316; Freire, 5: 5255.
"	Chile, Colombia, Bolivia			Used for *mulato*	Mantegazza, 50; Malaret, 829.
"	Brazil			Used for *cabra*	Espasa, 34: 1094.
"	Peru	Negro	White		Santamaria, 3: 309.
"	"	"	Mulata	"The most despised of all racial mixtures because of their perverted customs"	Alcedo, 184.
Zambo	Peru	Negro	China		Saco, 2: 67; Unanue, 51.
"	Mexico			Used for *cambujo*	Santamaria, 3: 309.
"	Parts of Spanish America			Generic term for designating racial mixtures which are part Negro	Malaret, 829–830
Zambo cabra	Brazil	Mulato	Negro		Santamaria, 3: 309.
Zambo claro	"	Cabra	Indian		Santamaria, 3: 309; Espasa, 34: 1094.
Zambo grifo		Mulato	Negro		Santamaria, 3: 309.
Zambo prieto	Brasil, Peru, Mexico	Zambo	"		Santamaria, 3: 309; Saco, 2: 67; León. 27; Flores, 2: 407; Unanue, 51; Espasa, 34: 1093.
"	Brazil	Cabra	"		Espasa, 34: 1094.
"	Cuba, Mexico	Lobo	"		Santamaria, 3: 309; Espasa, 34: 1093.
Zambo retorno		Mulato	"		Santamaria, 3: 309.
Zambo de indio	Mexico	Indian	"	Used for *cambujo*	Alcedo, 184; León, 27.
Zambo de Negro	Northern South America	Quinterón	"		Ulloa, 1: 30.
Zambo de mulato	"	"	"		"
Zambo de tercerón	"	"	"		"

BIBLIOGRAPHY

AGUIRRE BELTRÁN, GONZALO. *La población negra de México.* Mexico, 1946.

ALCEDO, ANTONIO DE. *Diccionario geográfico-histórico de las Indias occidentales o América.* 5 vols., Madrid, 1786–1789. All references are to the *Vocabulario* appended to vol. 5.

ASHBURN, P. M. *The ranks of death.* New York, 1947.

ARONA, JUAN DE. *Diccionario de peruanismos.* Paris, 1938.

AZARA, FÉLIX DE. *Viajes por la América meridional,* 2 vols. Madrid, 1923. 2: 155–163.

BARALT, RAFAEL MARÍA. *Resumen de la historia de Venezuela.* Paris, 1939.

CALCAÑO, JULIO. *El castellano en Venezuela.* Caracas, 1897.

Diccionario de la lengua española. Real Academia Española, Madrid, 1947. *Dic. leng. esp.*

Diccionario histórico de la lengua española. 2 vols. Madrid, 1936. *Dic. hist. leng. esp.*

ESPASA (see next item).

Enciclopedia universal ilustrada europeo-americana. Barcelona, n.d. Abbreviated to Espasa in text.

FLORES, FRANCISCO A. *Historia de la medicina en México desde la época de los indios hasta la presente,* 3 vols. Mexico, 1886–1888.

FREIRE, LAUDELINO DE OLIVEIRA. *Grande e novissimo dicionário da lingua portuguesa,* 5 vols. Rio de Janeiro, 1939–1944. *Gran. nov. dic. ling. port.*

FREYRE, GILBERTO. *The masters and the slaves,* translated and edited by Samuel Putnam. New York, 1946.

GRANADA, DANIEL. *Vocabulario rioplatense razonado.* Montevideo, 1890.

Grande enciclopedia portuguesa e brasileira, 16 vols. Lisbon, n.d. *Gran. encic. port. bras.*

GUMILLA, JOSÉ. *El Orinoco ilustrado,* edited by Constantino Bayle. Madrid, n.d.

HARING, C. H. *The Spanish empire in America.* New York, 1947.

HUMBOLDT, ALEJANDRO DE. *Ensayo político sobre el reino de la Nueva España,* edited by Vito Alessio Robles, 5 vols. Mexico, 1941.

JARAMULLO-ARANGO, JAIME. *An unpublished description of Lima by Hipólito Ruiz.* Bull. Spanish Stud. 25: 37, 40. 1948.

León, Nicolas, *Las castas de México colonial.* Mexico, 1924.

Lenz, Rodolfo. *Diccionario etimológico de las voces chilenas derividas de lenguas indijenas americanas.* Santiago, 1904.

Macias, José. *Diccionario cubano.* Veracruz, 1888.

Malaret, Agusto. *Diccionario de americanismos.* Buenos Aires, 1946.

Mansilla, Lucio Victorio. *Una excursión a los indios ranqueles.* Mexico, 1947.

Mantegazza, Paolo. *Viajes por el Rio de la Plata y el interior de la confederación argentina,* translated by Juan Heller. Buenos Aires, 1916.

Millau, Francisco. *Descripción de la provincia del Rio de la Plata (1772).* Buenos Aires, 1947.

Ramos, Arthur. *Las culturas negras en el nuevo mundo,* translated and edited by Jorge A. Vivó. Mexico, 1943. Ramos-Vivó.

Ramos i Duarte, Feliz. *Diccionario de mejicanismos.* Mexico, 1898.

Robelo, Cecilio A. *Diccionario de aztequismos.* Cuernavaca, 1904.

Roman, Manuel Antonio. *Diccionario de chilenismos y de otras voces y locuciones viciosas.* Santiago, 1908–1911.

Saco, José Antonio. *Historia de la esclavitud de raza africana en el nuevo mundo,* 4 vols. Habana, 1938.

Santamaria, Francisco J. *Diccionario general de americanismos,* 3 vols. Mexico, 1942.

Tannenbaum, Frank. *Slave and citizen.* New York, 1947.

Toro, Alfonso. *Compendio de historia de México,* 3 vols. Mexico, 1933–1938.

Ulloa, Antonio de, and Juan, George. *A voyage to South America,* 2 vols. London, 1760.

Unanue, Hipólito. *Observaciones sobre el clima de Lima y sus influencias en los seres organizados.* Lima, 1940.

Vallenilla Lanz, Laureano. *Las castas coloniales,* Cultura venezolana, Caracas, Nov. 1921: 108–114.

Vivó, Jorge A. *Geografía de México,* ch. 11. Mexico, 1948.

BOTANY.—*Diagnosis of the* Elsinoë *on flowering dogwood.*[1]

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In June 1948 we reported (4) the existence of a spot anthracnose affecting flowering dogwood (*Cornus florida* L.) and showed particularly by specimens then available that this had been found in Maryland, Virginia, North Carolina, South Carolina, and Georgia. Specimens have since been received from Delaware. In our preliminary account (loc. cit.) we described the symptoms of the disease. A diagnosis of the pathogen is here provided. This *Elsinoë* (Elsinoaceae, Myriangiales) not only constitutes another species of the genus on a tree host, but also it is the first to have been discovered on Cornaceae.

Elsinoë corni sp. nov., Jenkins and Bitancourt

Maculis in foliis paucis abundantibusve, usque 100 vel pluribus in lamina una, dispersis vel interdum nervisequentibus, circularibus usque angularibus vel irregularibus, typice parvis, usque ad 1 mm, rarius 1.5–2 mm in diam., superne prominentioribus et rubrogriseis, demum centro pallide flavo-griseo dehiscenti et lacunas vel lacerationes relinquenti; maculis in bracteis floralibus paucis numerosisve, dispersis, interdum in vel circa nervos dispositis, circularibus vel ellipticis, usque 1 mm in diam., singulis vel pauce aggregatis, pallide alutaceis, margine angusto brunneo usque purpureo et ultra zona indistincte alutacea circumdatis; cancris in petiolis, pedunculis, fructibus et caulibus parvis paucis vel plurimis, maculis foliorum similibus, planis vel valde elevatis, interdum leniter depressis. Ascomatibus comparative rarissimis, saepe 1–7 in superficie superiori maculae unae, circularibus usque leniter irregularibus, interdum coalescentibus, brunneis vel nigris, obscuratis, intraepidermi-

[1] Received August 25, 1948.

Fig. 1.—*Elsinoë corni,* pathogenic on flowering dogwood: *A,* Severely diseased shoot showing the typically small spots abundant on blade *a; b,* remnant of a diseased leaf; *c, d,* leaves that have become lacerated, *c* also showing infection along the midrib and *d* less distinct spotting on lower leaf surface; *e, e,* inconspicuous stem cankers; ×1. *B,* Petiole (*a*) and stem cankers (*e, e*), same as *A, e, e;* ×13. *C–E,* Various leaf spots, some showing "shot-holes," on upper third on a young leaf (*C*), basal part of a leaf including grooved petiole (*D*), intermediate region, with spotting on leaf margin; *C, a,* young ascomata (small dots); *E,* mature ascomata *a,* dotting pale centers of spots or remnants of them; ×13. *F,* Infected bract; ×1. *A–E,* Specimens from Highlands, N. C.; *F,* from Atlanta, Ga. Drawings by H. G. Stueler, based on photographs by R. L. Taylor and original specimens.

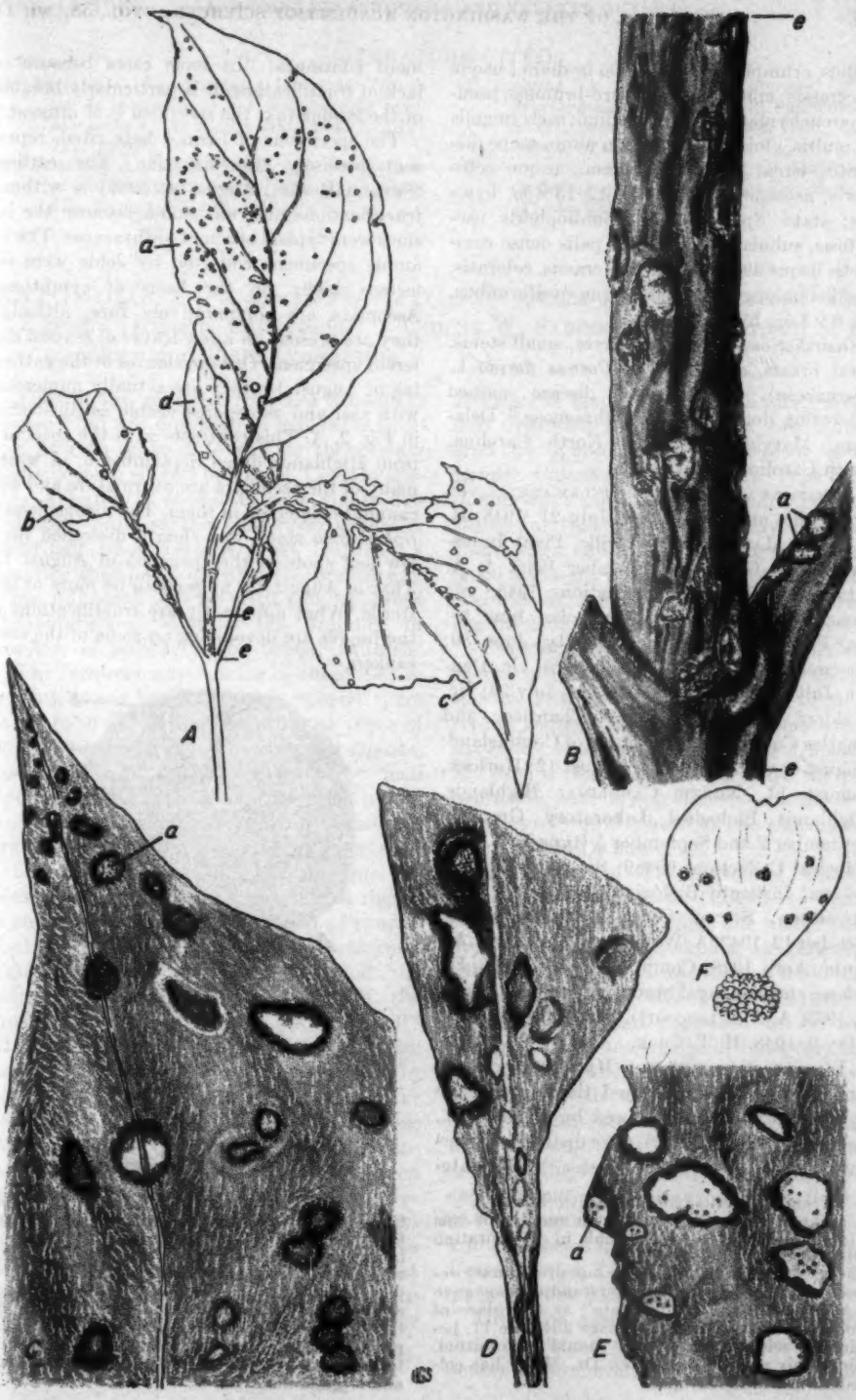

FIG. 1.—(See opposite page for legend.)

calibus, erumpentibus, 25–100μ in diam., usque 50μ crassis; epithecio tenui, atro-brunneo, pseudoparenchymate inferiori hyalino; ascis singulis vel multis, globosis, in stratum unum saepe dispositis, circa 16 mm in diam., usque octosporis; ascosporis 3-septatis, 12–15 $\times$ 5μ, hyalinis; statu *Sphacelomate;* conidiophoris caespitosis, subulatis, hyalinis in palis dense compactis usque 39μ in diam., 20μ crassis, coloratis, conidiis oblongo-ellipticis, usque pyriformibus, 4.5–6 $\times$ 2.5μ, hyalinis.[2]

Distribution.—On living leaves, small stems, floral bracts, and fruits of *Cornus florida* L. (Cornaceae), causing the disease named "flowering dogwood spot anthracnose," Delaware, Maryland, Virginia, North Carolina, South Carolina, and Georgia.

Specimens examined.—DELAWARE: vic. Bridgeville and vic. Laurel, July 21, 1948, R. A. Jehle. MARYLAND: Beltsville, Plant Industry Station Grounds, September 1946; A. A. Bitancourt; R. A. Jehle collections, 1948,[3] vic. Somerset County, near Pocomoke, June 15; vic. Pocomoke, Worcester County, June 30; Pocomoke and vic. Hebron, July 16; vic. Denton, July 21; vic. Upper Marlboro, July 29; vic. Waldorf, vic. Helen, vic. Chaptico, and Charles County, 10 miles north of Cobb Island, August 6; vic. Wye Mills, August 12; Hurlock, August 13. NORTH CAROLINA: Highlands, Highlands Biological Laboratory Grounds, September 2 and September 5 (type U. S. Mycological Collections 90489; Secção de Fitopatologia, Instituto Biológico 5167), 1947, J. A. Stevenson. SOUTH CAROLINA: Georgetown, October 12, 1943, A. W. Blizzard. GEORGIA: Atlanta, April 1948, Comm. J. H. Miller (*Sphaceloma* stage on floral bracts; Savannah, August 4, 1939, A. A. Bitancourt).[4] VIRGINIA: Norfolk, May 9, 1948, H. T. Cook.

In connection with our *Myriangiales selecti exsiccati* we (*3*) have noted that usually the symptoms of diseases caused by *Elsinoë*, i.e., spot anthracnoses (cf. *2*), "are distinct and permit identification of the disease." The statement continues: "In some cases because of lack of fructifications it is particularly because of the lesions that the specimen is of interest."

The specimens of Elsinoë here cited, represent precisely this situation. The earliest (Savannah, Ga., August 4, 1939) is without fructifications and was taken because the lesions were typical of a spot anthracnose. The 12 ample specimens collected by Jehle were selected chiefly on the basis of symptoms. Ascomata are comparatively rare, although they are present on a few leaves of several different specimens. On some leaves of the gathering of August 13, they are actually numerous, with asci and ascospores visible as illustrated in Fig. 2, A. This contrasts with the specimen from Highlands dated September 5, in which many of the ascomata are overmature and asci cannot be detected in them. The inconspicuous *Sphaceloma* stage was clearly discerned on a few leaf spots of the specimen of August 13. That of August 12, appears to be more or less sterile. What apparently are fructifications of the fungus are developing on some of the stem cankers.

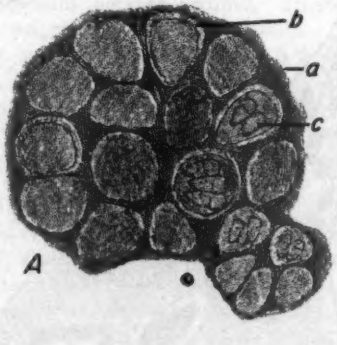

FIG. 2.—*A*, Viewed from above, thin ascoma of the *Elsinoë* on practically transparent leaf-spot tissue; *a*, dark epithecium; *b*, ascus; *c*, ascospores indistinctly visible; $\times$500. For a similar illustration of another species of *Elsinoë*, cf. Arnaud (*1*, pl. 4, figs. C, D). *B*, Section of a smaller ascoma; *a*, epithecium; *b*, ascus; *c*, ascospores; *d*, leaf-spot tissue; $\times$450. Drawings by Stueler; *A* based on a photomicrograph by Bitancourt and original material; *B* on a photomicrograph by M. A. Jaeger and original material.

[2] Translated into Latin by Edith K. Cash.

[3] These specimens represent a survey for this disease being made by Dr. Jehle in collaboration with one of us (Jenkins).

[4] In citing this specimen in our preliminary report (*4*), through a misunderstanding, we gave "Athens" instead of "Atlanta" as the place of collection. The sentence on page 254, line 11, beginning with "Dr. Miller" should be omitted. Since this paper was written Dr. Miller has collected *Elsinoë* at Athens.

LITERATURE CITED

(1) ARNAUD, G. *Les Astérinées, IV^e partie. (Étude sur le systématique des champignons pyrénomycètes.)* Ann. Sci. Nat. Bot. **7**: 643–722. 1925.

(2) JENKINS, A. E. *A specific term for diseases caused by* Elsinoë *and* Sphaceloma. Plant Dis. Reporter **31**: 71. 1947.

(3) JENKINS, A. E., and BITANCOURT, A. A. *Myriangiales selecti exsiccati*, Fasciculos 2–6 (Numeros 51–300). Bot. Soc. Bras. Agron. **9**: 157–164. 1946.

(4) ———— ————. *A spot anthracnose on flowering dogwood.* Plant Dis. Reporter **32**: 253–255. 1948.

ENTOMOLOGY.—*A synopsis of the Nearctic species of* Elachiptera *and related genera (Diptera, Chloropidae).*[1]

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Flies of the genus *Elachiptera* Macquart (*sensu lato*) are common in general collecting, and an up-to-date key for their ready identification should be useful. Certain species, apparently abundant and widely distributed, have in the past been generally identified upon certain gross features, a practice that has concealed the presence of some unnamed species with less apparent characteristics, such as the presence or absence of pollen on the ocellar tubercle.

The frequent appearance of these flies in rearing cages has sometimes caused them to be recorded in the literature as pests of various plants. Available evidence suggests, however, that the larvae probably feed upon decaying organic matter, such as old leaf sheaths, or decaying plant tissue and grass following damage by other insects.

Generic limits are difficult to define, especially when more than one faunal region is considered, in the large group of species that may be referred to as the "*Elachiptera* complex." The flattened arista and the marginal scutellar tubercles, two of the most distinctive features of "typical" *Elachiptera* (*brevipennis, costata*, etc.), are subject to a wide range in development in different species. Whatever the character used, there seems always to be an otherwise characteristic species that is an exception. As for the various genera that have been erected for species of this complex (*Elachiptera* Macquart, *Melanochaeta* Bezzi, *Doliomyia* Johannsen, *Crassiseta* Loew, *Eribolus* Becker), the definition of what is a distinct genus, what a subgenus, and what a synonym is extremely difficult. In this paper *Eribolus* is recognized as a distinct genus, and *Crassiseta* and *Doliomyia* are considered as synonyms of *Elachiptera* (*sensu stricto*). *Doliomyia* has a peculiar type of abdomen that might seem to merit separate status for that name, but many species of *Elachiptera* show some lengthening of the basal segment, and in Africa there are several species which nearly match the extreme condition in *D. longiventris* Johannsen.

The status and relationships of *Melanochaeta* need much further study, and its species have not been included here. In recent years it has often been considered a subgenus of *Elachiptera*. One new species, *M. kaw*, is described here because the past confusion with *Monochaetoscinella nigricornis* (Loew) would otherwise leave a common form without a name.

Recognition of the relation of *E.* (*Melanochaeta*) *nigricornis* (Loew) to *Monochaetoscinella* Duda brings the latter name into the *Elachiptera* complex. Its genotype, the Neotropical *M. anonyma* (Williston), has a slender, *Oscinella*-type arista, and its affinities had been supposed to be with *Oscinella*. It is now realized, however, that *nigricornis* (with flattened arista) and *anonyma* (with slender arista) have the same fundamental features of generic significance, and that the development of the arista in the former is only a specific character in that case. Because of other distinctive characteristics, and because the few known species are Neotropical to southern United States, I recognize it here as a genus distinct from *Elachiptera*.

All ratios used in the key and descriptions are based on measurements with an ocular micrometer, and not on estimates.

[1] Received August 18, 1948.

For greater precision in the measures used, the width of the front is defined as the distance between the eyes across the posterior ocelli, the length of the front is the distance from the anterior margin of the front at the midline to an imaginary line between the posterior ocelli, and the basal width of the scutellum is measured between the two lateral points where the disk of the scutellum touches the mesonotum. It is especially important to note the last, for sometimes the sides of the scutellum as they slope downward and outward from the base make the basal width appear greater in proportion to the length than it really is.

Most of the species of this complex will pass to *Crassiseta* in Curran's *The families and genera of North American Diptera* (1934) and to *Elachiptera* in Williston's *Manual* (1908), on the basis of the following characters: Costa extending to the fourth longitudinal vein, hind tibia without a spur, second costal sector longer than the third sector or at least not remarkably abbreviated, and arista flattened and ensiform. The species which will be difficult to place here without comparative study are those with slender, atypical arista. The 1 +1 notopleural bristles, erect and cruciate ocellars and post-verticals, and the presence (except in *E. aliena*) of 1 or 2 pairs of outstanding fronto-orbitals (Figs. 5, 6) are other features that will aid in segregating this group.

KEY TO THE NEARCTIC SPECIES OF ELACHIPTERA MACQUART AND RELATED GENERA

1. Frontal triangle subshining or with a leaden-gray luster, the entire surface covered with fine gray tomentum or pollen; mesonotum and scutellum with same habitus as triangle, the former characteristically flattened between the dorsocentral lines on posterior half to two-thirds of notum; scutellum flattened and short, less than 0.7 times as long as broad at base (*Eribolus* Becker) 2

   Triangle entirely or predominantly smooth and polished, sometimes with pollen on and around ocellar tubercle; mesonotum usually polished black, or with three stripes of pollen, occasionally broadly pollinose between and including the dorsocentral lines 4

2. Legs predominantly bright yellow, fore coxa always, fore femur entirely or predominantly, and mid and hind femora basally, yellow; palpus yellow in males, more or less infuscated in females (eastern half of North America) . . . . . 1. *Eribolus longulus* (Loew)

   Legs predominantly black, fore coxa always, and all femora except knees narrowly, black (northern and northwestern) 3

3. Antenna entirely black, or virtually so; palpus black in both sexes . . . . . 2. *Eribolus sudeticus* Becker

   Antenna in large part yellow to orange, often only the dorsal fourth of third segment black; palpus yellow in both sexes . . . . . 3. *Eribolus nearcticus*, n. sp.

4. Scutellum of *Oscinella* type (Fig. 9), short and broadly rounded apically, 0.67–0.8 times as long as width at base, the disk gently convex; marginal scutellar bristles not borne on tubercles, one pair of widely separated apicals and one pair of weak subapicals; mesonotum and scutellum smooth, the piliferous punctures fine and inconspicuous, the regularly convex surfaces never densely and coarsely punctured or rugose 5

   Scutellum not as above, more or less trapezoidal in outline and often apically subtruncate (Figs. 10–12), usually somewhat elongate, typically 0.9–1.25 times the width at base (if as short as 0.75, then the marginal scutellars on distinct tubercles); marginal scutellar bristles borne on more or less distinct tubercles, with somewhat approximated apicals and 2–3 pairs of subapicals; mesonotum and scutellum almost always coarsely punctured, usually so densely that the surface appears strongly rugose, in profile the posterior half of mesonotum and the disk of scutellum obviously flattened (*Elachiptera, sensu stricto*) 7

5. One pair of long, unusually strong, black, and outstanding fronto-orbital bristles (Fig. 5); cheek divided by a diagonal line into a whitish pollinose anterodorsal and a polished black posteroventral portion (*Monochaetoscinella* Duda) 6

   Not as above, usually with two pairs of slender, pale fronto-orbitals that are longer than the others in fronto-orbital row (cf. Fig. 6), sometimes with none that are outstanding; cheek not so divided, pollinose along entire lower margin of eye . . . . . *Melanochaeta* spp. (*eunota* Loew, *melampus* Becker, *kaw*, n. sp.

6. Arista slender, pubescent, not at all thickened (Neotropical) . . . . . 4. *Monochaetoscinella anonyma* (Williston)

   Arista broadly flattened basally, strongly tapering, densely and evenly long haired, the appearance that of typical *Elachiptera* (as in Fig. 7, but tapering from base to apex) (southeastern United States) . . . . . 5. *Monochaetoscinella nigricornis* (Loew)

ELACHIPTERA, SENSU STRICTO

7. Basal segment of abdomen peculiarly elongated and developed as a basal plate occupying, in dorsal view, all but tip of abdomen, its length greater than that of mesonotum and scutellum combined..... 6. *Elachiptera* (*E.*) *longiventris* (Johannsen)

Abdomen without such an elongated basal plate, the basal segment at most half the length of abdomen.....8

8. Fronto-orbitals hairlike, short and all of approximately the same length, none outstanding; mesonotum densely and finely punctured, with no obvious rows of punctures; arista as in *Gaurax*, slender and sparsely short haired..... .....7. *Elachiptera* (*E.*) *aliena* Becker

Two pairs of bristles long and outstanding in fronto-orbital row (Fig. 6); mesonotum less densely punctured, at least median and dorsocentral rows distinct; arista usually thickened and densely pubescent, often flattened and ensiform.....9

9. Pleuron entirely or largely reddish yellow, or entire thorax reddish.....10

Thorax entirely black.....15

10. Scutellum reddish yellow; mesonotum usually reddish yellow, at most narrowly black at neck.....11

Scutellum black; mesonotum at least partly black.....13

11. Mesonotum almost entirely polished, with only a notopleural spot and a narrow prescutellar band of pollen..... .....8. *Elachiptera* (*E.*) *willistoni*, n. sp.

Mesonotum with a broad median stripe of fine bright pollen, or entirely pollinose..12

12. Scutellum like *E. costata* (cf. Fig. 12), with two pairs of strong marginal tubercles and a weak, basal third pair; mesonotum apparently pollinose on its entire surface... .9. *Elachiptera* (*E.*) sp. (North Carolina)

Scutellum like *E. willistoni* (cf. Fig. 10), trapezoidal, apical pair of tubercles weak and subapical scarcely distinguishable; mesonotum with a broad median stripe of fine, bright pollen, between and including the dorsocentral lines..... 10. *Elachiptera* sp. (District of Columbia)

13. Mesonotum reddish on sides, with a broad median black stripe, gray pollinose; scutellum long conical with three pairs of strong tubercles..11. *Elachiptera* (*E.*) *tau*, n. sp.

Mesonotum entirely black, only the pleuron reddish yellow.....14

14. Mesonotum typically with three stripes of gray pollen, in median and dorsocentral positions; scutellum as in *E. costata* (cf. Fig. 12), with three pairs of strong marginal tubercles..... ..13. *Elachiptera* (*E.*) *erythropleura*, n. sp

Mesonotum polished, without stripes of pollen, and with only a narrow prescutellar band of pollen; scutellum strongly narrowed, three pairs of tubercles close together on distal half, the tubercles less distinct than in *costata* and *erythropleura*.... ....14. *Elachiptera* (*E.*) *angusta*, n. sp.

15. Scutellum flattened and elongate, trapezoidal in outline, with three pairs of long, well-developed scutellar tubercles, the apical tubercles strong, obviously longer than broad (Fig. 12); disk of mesonotum broadly pollinose...12. *Elachiptera* (*E.*) *costata* (Loew)

Scutellum usually shorter and somewhat rounded apically, sometimes narrowed apically, the 2 or 3 pairs of marginal tubercles distinct but small, each not as long as broad (Fig. 11); mesonotum entirely shining or with three stripes of gray pollen rarely the stripes merged together.....16

16. Both frontal triangle and ocellar tubercle smooth and polished, without pollen; disk of mesonotum never with stripes of pollen 17

Frontal triangle polished; ocellar tubercle distinctly gray pollinose,[2] or if shining, the mesonotum with 2 or 3 stripes of gray pollen.....20

17. Front obviously longer than broad, length 1.1 times the width at vertex (Fig. 14); mesonotum likewise appearing longer than broad, length actually 1.09–1.1 times its width..... ....17. *Elachiptera* (*E.*) *angustifrons*, n. sp.

Front appearing approximately as long as broad, length usually 0.83–0.96 times the width at vertex, occasionally the length and width subequal (Fig. 13); mesonotum appearing nearly square, measuring 0.90–1.04 times as long as broad.....18

18. Legs predominantly yellow, including all coxae and femora; fore and hind tibiae black; frontal triangle shorter and with sides less convex than in *nigriceps* and *angustistylum*..... ...16. *Elachiptera* (*E.*) *pechumani*, n. sp.

Legs more extensively patterned with black, including distal one-third to two-thirds of mid and hind tibiae; frontal triangle large and occupying most of front (Fig. 13), reaching anterior margin of front, or nearly so, and with strongly convex sides.....19

19. Arista broad and flat, ensiform, sides parallel nearly to tip, its width one-half to four-fifths that of cheek (Fig. 7)..... ....15. *Elachiptera* (*E.*) *nigriceps* (Loew)

Arista narrower, in female two-fifths or less the height of cheek, in male slender and only slightly thickened, in both sexes narrowing from base to tip (Fig. 8)..... .18. *Elachiptera* (*E.*) *angustistylum*, n. sp.

20. Hind femur strongly incrassate, its greatest width 2–2.8 times the diameter of hind tibia; disk of mesonotum with three distinct stripes of gray pollen; frontal triangle

[2] In greasy or rubbed specimens, the shiny appearance may be misleading.

long; arista broad and flat on its entire length. 19. *Elachiptera* (*E.*) *formosa* (Loew)

Hind femur not strongly incrassate, its greatest width about 1.5–1.85 times the diameter of hind tibia; at least one other character not as above 21

21. Arista broad and flat for its entire length, sides parallel nearly to apex (cf. Fig. 7), its width equal to at least half the distance between posterior ocelli, usually fully equal to the distance; frontal triangle only three-fourths the length of front; mesonotum with 2 or 3 stripes of gray pollen 22

Arista narrower and tapering from base to apex, not broad and flat as above, its width midway only subequal to a single posterior ocellus 23

22. Ocellar tubercle distinctly bright gray pollinose (widespread, northern United States) ....20. *Elachiptera* (*E.*) *vittata*, n. name (=*E. bilineata* Adams, preoc.)

Ocellar tubercle polished black (California).. .....21. *Elachiptera* (*E.*) *californica*, n. sp.

23. Frontal triangle long, its apex nearly reaching anterior margin of front; front relatively long, its length 1.0–1.07 times the width at vertex ....22. *Elachiptera* (*E.*) *penita* (Adams)

Frontal triangle shorter, only three-fourths the length of front; front relatively broad, its length only 0.87–0.96 times the width at vertex 24

24. Thorax polished, without pollen except on notopleura and around bases of wings.... .....23. *Elachiptera* (*E.*) *knowltoni*, n. sp.

Thorax typically with two narrow stripes of gray pollen 25

25. Frontal triangle black, and cheeks and posterior portion of front predominantly brown to blackish, the head appearing dark (Alaska to Colorado)..... .....24. *Elachiptera* (*E.*) *decipiens* (Loew)

Triangle reddish to brown, and front, face and cheeks bright yellow, the head appearing bright (California, Oregon, Idaho)..... .....25. *Elachiptera* (*E.*) *flaviceps*, n. sp.

Genus **Eribolus** Becker

Eribolus Becker, Archivum zoologicum **1**: 127. 1910. (Type, *E. sudeticus* Becker, by designation of Enderlein, 1911.)

Becker, followed by Enderlein, Duda, and other workers, recognized this as a distinct genus, based on three European species with a rather uniform habitus of flattened, leaden-gray mesonotum, leaden-gray frontal triangle, and slender, slightly thickened arista. Otherwise, its fundamental characters are the same as in *Elachiptera*, notably the 1+1 notopleural bristles, ocellar and postvertical bristles erect and cruciate, two pairs of fronto-orbital bristles well developed and standing out over the adjoining orbital hairs, eyes with minute and sparse pubescence, and similar wing venation.

The slightly thickened arista seemed distinct enough in the Palearctic fauna, compared with the broadly flattened, ensiform arista of most of the European species of *Elachiptera*. In North America, however, there is a species which is unquestionably congeneric with *Eribolus* species of Europe, but the arista is somewhat variable, and sometimes, especially in the female sex, it may be definitely (though narrowly) ensiform, as in typical *Elachiptera*. This species, which is quite common in eastern North America, has usually been recorded as *Elachiptera longula* (Loew), or sometimes in combination with the names *Crassiseta* or *Melanochaeta*, but it is placed here in *Eribolus*.

1. **Eribolus longulus** (Loew), n. comb.

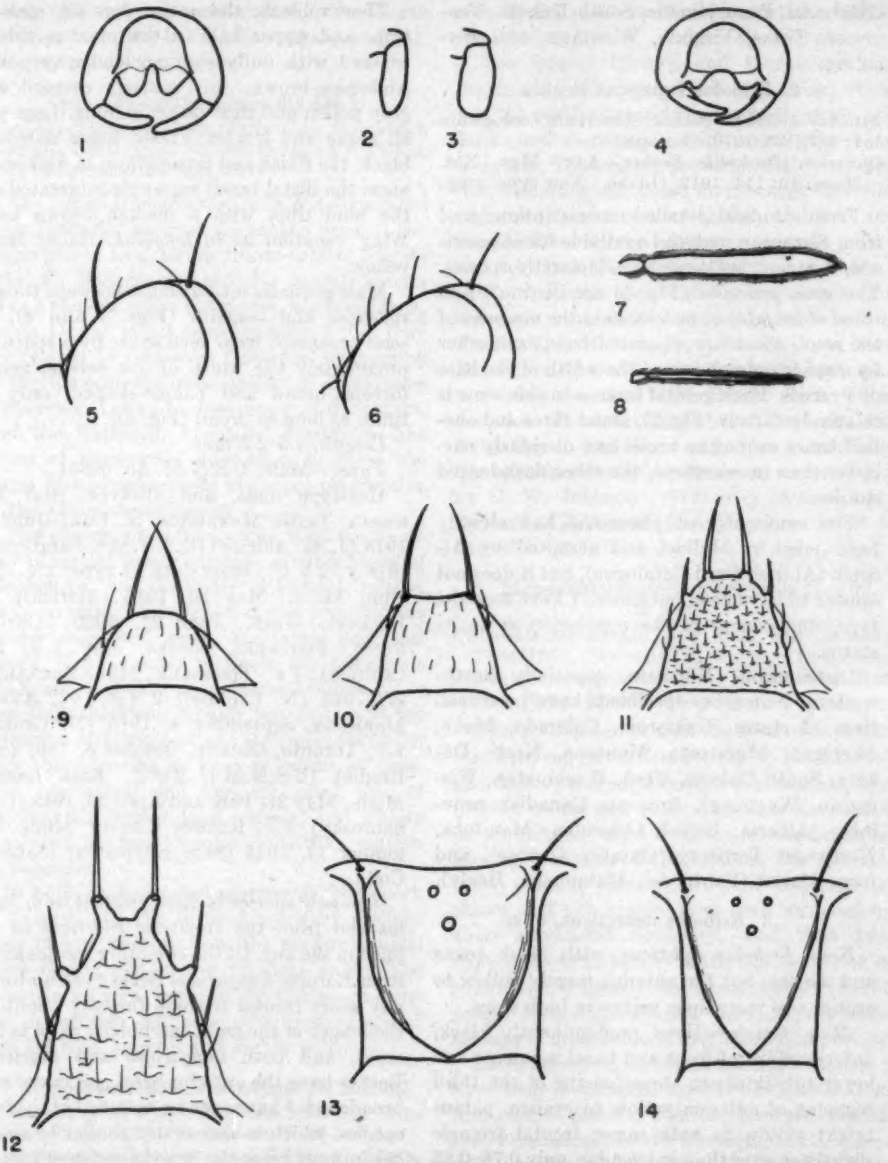
Crassiseta longula Loew, Berl. Ent. Zeitschr. **7**: 34. 1863. (Centuria III, No. 64.) (District of Columbia.)

Melanochaeta longula (Loew) Becker, Ann. Mus. Nat. Hung. **10**: 83. 1912.

Melanochaeta intermedia Becker, *ibid.* **10**: 83. 1912. (Pennsylvania.) New synonymy (from holotype in Melander Collection).

The typically bright yellow legs will distinguish this form from either *sudeticus* or *nearcticus*. A few northern and northwestern specimens have been seen in which the areas of infuscation on the mid and hind femora are somewhat more extensive than usual, and even the fore femur may be dusky on the distal half, but the fore coxa and the bases of all femora are always characteristically yellow. The male genitalia are easily distinguished from either of the dark-legged species by the widely spaced cerci (Fig. 4), which are separated from each other by a distance greater than the width of either. The genital forceps, in side view, are narrower than those of *nearcticus*, and are proportioned approximately like those of *sudeticus*, being about four times as long as broad (cf. Fig. 2).

The species is one of the most common and widely distributed chloropids east of the Rocky Mountains. Numerous records are available from Ontario, Quebec, the District of Columbia, and 28 states: Arkansas, Colorado, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, New Hampshire, New Jersey, New York, North Carolina, Ohio,



FIGS. 1–4.—Male genitalia of *Eribolus:* 1, *E. sudeticus,* posterior aspect; 2, *E. sudeticus,* side view of forceps; 3, *E. nearcticus,* side view of forceps; 4, *E. longulus,* posterior aspect. FIGS. 5, 6.—Profile of upper half of the head of *Monochaetoscinella nigricornis* (5) and *Elachiptera nigriceps* (6). FIGS. 7, 8.—Side view of arista of *Elachiptera nigriceps* (7) and *E. angustistylum* (8). FIGS. 9–12.—Outline of dorsal aspect of scutellum of *M. nigricornis* (9), *Elachiptera willistoni* (10), *E. nigriceps* (11), and *E. costata* (12). FIGS. 13, 14.—Front and frontal triangle of *E. nigriceps* (13) and *E. angustifrons* (14). Drawings of *willistoni* and *angustifrons* from holotypes, *angustistylum* from female paratopotype. *nearcticus* from male paratopotype, others from determined material.

Oklahoma, Pennsylvania, South Dakota, Tennessee, Texas, Virginia, Wisconsin, and Wyoming.

2. Eribolus sudeticus Becker

Eribolus sudeticus Becker, Archivum zoologicum 1: 127, 138. 1910. (Europe.)
Oscinella planicollis Becker, Ann. Mus. Nat. Hung. 10: 114. 1912. (Idaho.) New synonymy.

From Duda's detailed redescription, and from European material available for comparison, I accept *sudeticus* as a Holarctic species. The male genitalia (Fig. 1) are distinct from those of *longulus* or *nearcticus* in the nearness of the cerci, which are separated from each other by a space only one-third the width of the base of a cercus. Each genital forceps in side view is relatively narrow (Fig. 2), about three and one-half times as long as broad and obviously narrower than in *nearcticus*, the other dark-legged species.

The synonymy of *planicollis* had already been noted by Malloch and accepted by Aldrich (Aldrich Card Catalogue), but it does not appear to have been published. I have seen the type, and concur in the conclusion as to its status.

Distribution: Northern, especially northwestern. Numerous specimens have been seen from 12 states (California, Colorado, Idaho, Michigan, Minnesota, Montana, North Dakota, South Dakota, Utah, Washington, Wisconsin, Wyoming), from six Canadian provinces (Alberta, British Columbia, Manitoba, Northwest Territory, Ontario, Quebec), and from Alaska (Fairbanks, Matanuska, Healy).

3. Eribolus nearcticus, n. sp.

Near *Eribolus sudeticus*, with black coxae and femora, but the antenna largely yellow to orange and the palpus yellow in both sexes.

Male, female.—Head predominantly black, anterior third of front and basal segments and lower two-thirds to three-fourths of the third segment of antenna yellow to orange, palpus bright yellow in both sexes; frontal triangle slightly shorter than in *longulus*, only 0.78–0.85 times the length of front; the two pairs of well developed fronto-orbital bristles distinctly longer than the adjoining hairs, but relatively short and inconspicuous compared with species of *Elachiptera;* arista pubescent, thickened at base and slightly thickened the rest of its length, but not at all flattened.

Thorax black, the entire dorsum, metanotum, and upper half of the pleuron thickly covered with dully shining, lead-gray pollen. Abdomen brown, only sparsely covered with gray pollen and thus rather shining. Legs with all coxae and femora, except knees narrowly, black, the tibiae and tarsi yellow, in dark specimens the distal tarsal segments infuscated and the hind tibia with a median brown band. Wing venation as in *longulus*. Halter lemon yellow.

Male genitalia intermediate between those of *sudeticus* and *longulus* (Figs. 1 and 4), the cerci separated from each other by a space approximately the width of one cercus; genital forceps broad and paddle-shaped, only 2.3 times as long as broad (Fig. 3).

Length, 1.5–2.5 mm.

Type.—Male, U.S.N.M. no. 58861.

Holotype male, and allotype, near Bottineau, Turtle Mountains, N. Dak., June 21, 1918 (J. M. Aldrich) [U.S.N.M.]. Paratypes: 8 (6 ♂♂, 2 ♀♀), same data as type; 1 ♀, New Ulm, Minn., May 30, 1916 (Aldrich); 1 ♂, Buckeye, Wash., June 21, 1930 (Aldrich); 5 ♂♂, Fairbanks, Alaska, July 1–3, 1921 (Aldrich); 1 ♀, Treesbank, Manitoba, August 27, 1915 (N. Criddle); 2 (♂, ♀), Aweme, Manitoba, September 4, 1916 (N. Criddle); 1 ♂, Toronto, Ontario, October 6, 1891 (Wm. Brodie) [U.S.N.M.]; 2 ♂♂, East Lansing, Mich., May 28, 1940 and April 29, 1942 (C. W. Sabrosky); 1 ♂, Ramsey County, Minn., September 14, 1925 (Sam Kepperley) [Sabrosky Coll.].

The new species is distinguished from *longulus* and from the Holarctic *sudeticus* as outlined in the key. Of the two other species known from Europe, *hungaricus* Becker has an unusually short frontal triangle (usually about half the length of the front) and black palpi in both sexes, and both *hungaricus* and *slesvicensis* Becker have the anterior basal cell more or less broadened. I have seen no material of the latter species, which is apparently similar to *nearcticus* in most respects, but the series of *hungaricus* sent me some years ago by Dr. Duda shows clearly the distinctly broadened cell. Inasmuch as *slesvicensis* was described as having the same type of cell as *hungaricus*, and our American form does not have this type of cell, I accept the latter as a distinct species, even though only that one difference can be stated at the mo-

ment. All three species occurring in North America have the basal cell elongate and narrow, not at all broadened.

Genus **Monochaetoscinella** Duda

Monochaetoscinella Duda, Folia Zool. Hydrobiol. **2**: 107. 1930. (Type, *Oscinis anonyma* Williston, by designation of Duda, 1931.)

The genus *Monochaetoscinella* was segregated from *Oscinella* particularly on the basis of the single pair of long, strong fronto-orbital bristles (Fig. 5). Because the hitherto known species have a slender arista (*anonyma*, *nigripes* Duda, *zernyi* Duda), it has been considered that they are related to *Oscinella*. However, recognition of the fundamental relationship of *Elachiptera nigricornis* (Loew) to *anonyma* and the others, and the flattened, typically *Elachiptera*-like arista of *nigricornis*, now seem to place the genus *Monochaetoscinella* in proper perspective in the *Elachiptera* complex.

The generic characters, other than the single pair of strong fronto-orbitals, are like those of *Elachiptera:* eye distinctly pubescent; ocellar and postvertical bristles erect and cruciate, the former short and weak, the latter long and strong, like the outer verticals; inner verticals weak and hairlike; notopleural bristles 1+1; scutellum short and broadly rounded, as in the subgenus *Melanochaeta* and the genus *Oscinella*, only three-fourths as long as width at base, with one apical and one subapical pair of bristles, the former long, strong, and widely separated, the latter weak and hairlike, neither on tubercles.

In both *anonyma* and *nigricornis*, the cheek is divided into two distinct areas by a slight ridge or line running from the postero-ventral angle of the eye to the vibrissal angle. The anterodorsal area, between the vibrissa and the eye, is whitish pollinose; the posteroventral area is black, smooth and highly polished.

4. **Monochaetoscinella anonyma** (Williston)

Oscinis anonyma Williston, Trans. Ent. Soc. London for 1896; 423. (St. Vincent, West Indies.)
Monochaetoscinella anonyma (Williston) Duda, Folia Zool. Hydrobiol. **2**: 107. 1930.

This species is Neotropical, but it is included here for comparison with *nigricornis* because it is the genotype of *Monochaetoscinella* and also because it is known to occur in Bermuda, and at Key West, Fla., and Tampico, Mexico, and may be expected to be found, at least occasionally, in southern Texas and southern Florida.

The frontal triangle and thorax are predominantly shining and highly polished black, but the ocellar tubercle and scutellum are pollinose and there is a narrow prescutellar band of pollen. The legs are predominantly deep yellow, including all coxae and femora, the fore tibia and fore tarsus are black, and mid and hind tibiae and tarsi are predominantly yellow but may be slightly infuscated.

The species is apparently quite common, for there are a number of published records from Puerto Rico, Bolivia, Peru, Brazil, Costa Rica, Panama, and the Canal Zone, and I have seen numerous examples from Puerto Rico, Cuba, Jamaica, Mexico, Guatemala, Panama, Bolivia, Brazil, and Bermuda. This is probably the species recorded as *Oscinis umbrosa* Loew by C. W. Johnson (1913) in a paper on the Diptera of Bermuda (Ann. Ent. Soc. Amer. **6**: 443–452. 1913).

5. **Monochaetoscinella nigricornis** (Loew), n. comb.

Crassiseta nigricornis Loew, Berl. Ent. Zeitschr. **7**: 34. 1863. (Centuria III, No. 65.) (Louisiana.)
Melanochaeta nigricornis (Lw.) Becker, Ann. Mus. Nat. Hung. **10**: 83. 1912.

This species agrees with the description given for *anonyma*, but differs mainly by its flattened and densely haired, *Elachiptera*-like arista. The present writer and other dipterists have erred in identifying *nigricornis* as a wide-ranging species of eastern United States. On the contrary, careful reexamination of the material shows that two species have been confused by close superficial similarity, and that true *nigricornis* is in reality distinctly a species of southeastern United States, and belongs in the genus *Monochaetoscinella*. The other species belongs in *Melanochaeta* and is described below.

Distribution: Southeastern United States. I have seen material of typical *nigricornis* from Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, and Texas. The northernmost records that I have are Raleigh, N. C., Knoxville and Nashville, Tenn., and Fayetteville, Ark.

Melanochaeta kaw, n. sp.

Crassiseta (*Melanochaeta*) *nigricornis* Loew, in part, of Sabrosky, Trans. Amer. Ent. Soc. **61**: 246. 1935.

Shining black species with bright yellow legs, resembling *Oscinella umbrosa* (Loew) except for the flattened and long-haired arista, and differing from the superficially similar *Monochaetoscinella anonyma* as noted in the key.

Male, female.—Head, including antenna and palpus, black, the cheek and anterior half of front paler, brown to dark reddish; thorax entirely black; abdomen brown; legs, including all coxae, bright yellow, at most the distal segment or two of each tarsus browned; halter pale lemon yellow to whitish yellow; wing hyaline, lightly tinted with brown.

Eye short pubescent; front at the vertex one and one-half times the width of an eye and 0.40–0.45 times the width of the head, but appearing relatively narrow because the length of the front is slightly greater than the width; frontal triangle smooth and polished, large and occupying most of front, the basal corners nearly touching the eyes at the vertex and the apex reaching the anterior margin of front; cheek narrow, almost linear, dull and finely pollinose; third antennal segment reniform, 1.7 times as broad as long; arista rather broadly flattened basally but narrowing to apex, the entire length densely covered with long hairs whose length is subequal to the greatest width of the flattened portion, the total effect as seen under low magnification being that of an arista broadly flattened clear to the apex.

Thorax smooth and polished, only the scutellum subshining and covered with gray pollen; piliferous punctures on mesonotum fine and inconspicuous, rather sparse.

Second costal sector of wing 1.3 times the length of third sector: third vein gently curved forward apically, the third and fourth veins diverging slightly: fore crossvein at the middle of the discal cell.

Length, 1.5–1.75 mm.

Type.—Male, U.S.N.M. no. 58870.

Holotype male and allotype, Manhattan, Kans. (C. W. Sabrosky), the type collected June 9, 1934, the allotype September 20, 1933. Types deposited in the U. S. National Museum. Paratypes: 4 (2 ♂ ♂, 2 ♀ ♀), Manhattan, Kans., October 4, 1933, May 21, 26, and June 26, 1934 (C. W. Sabrosky); 6 (4 ♂ ♂, 2 ♀ ♀), Manhattan, Kans., August 29 and September 15, 1930, June 1 and 4, 1932 (D. A. Wilbur); 2 ♀ ♀, State Lake, Ottawa County, Kans., June 24, 1934 (C. W. Sabrosky); 1 ♂, Falls Church, Va., June 16 (N. Banks) [Sabrosky Coll.]: 2 ♀ ♀, Chesapeake Beach, Md., August 19 and May 30, 1919 (J. M. Aldrich); 1 ♀, Gatlinburg, Tenn., 5600 ft., July 2, 1947 (R. H. Whittaker); 2 ♀ ♀, Plano, Tex., June 1907 (E. S. Tucker, determined as *Elachiptera nigricornis*) [U.S.N.M.]; 1 ♀, Cheboygan County, Mich., July 18, 1940 (R. I. Sailer) [Kansas Univ. Coll.].

The species is named for an Indian tribe which formerly lived along the Kansas River.

Genus **Elachiptera** Macquart

Elachiptera Macquart, Histoire naturelle des insectes: Diptères **2**: 621. 1835. (Type, *Chlorops brevipennis* Meigen, by original designation and monotypy.)

6. **Elachiptera (E.) longiventris** (Johannsen)

Melanochaeta (*Doliomyia*) *longiventris* Johannsen, Can. Ent. **56**: 89. 1924. (New York.)

The peculiar abdominal structure will separate this species from any other chloropid in North America. In most respects, it is somewhat intermediate between *Elachiptera* and *Eribolus*, but favoring the former. As noted in the introduction, I regard the subgenus *Doliomyia*, proposed for *longiventris*, as a synonym of typical *Elachiptera*, rather than of *Melanochaeta* as Johannsen placed it.

The bristles of the head are greatly reduced, as in *E. aliena*, the ocellars, postverticals and fronto-orbitals being minute and scarcely distinguishable from hairs.

The species is rare in collections. Aside from the three original specimens, all from Ithaca, N. Y., I know of only one other example, a female, College Station, Tex., February 1891 (Webster), labeled "from wheat" [U.S.N.M.]. From this, it may be inferred that the species ranges throughout eastern United States, though rarely collected.

7. **Elachiptera (E.) aliena** Becker

Elachiptera aliena Becker, Ann. Mus. Nat. Hung. **10**: 81. 1912. (Massachusetts.)

Despite its decidedly atypical arista, this species unquestionably belongs in the genus *Elachiptera*, from the general body structure, wing venation, and chaetotaxy. The bristles are reduced in size, however, and thus they do not stand out as strongly as in typical species. The short ocellars and postverticals are convergent

to the tips instead of cruciate, and the usually distinct two pairs of fronto-orbitals are distinguished under relatively high magnification only by being slightly thicker than neighboring fronto-orbital hairs.

The ocellar tubercle is gray pollinose. The humeri are polished black, and under low power the disk of the mesonotum also appears shining and without pollen, though under high power there are sparse, minute flecks of gray pollen on the anterior half. The legs are predominantly yellow, marked with black on the distal half of the mid and hind femora and median third to half of the mid and hind tibiae in the male, and on the distal two-thirds of the corresponding femora and virtually all the corresponding tibiae in the female.

Despite its generally atypical habitus, it is probably best associated with the *nigriceps* group.

The species does not appear to be very common. Relatively few specimens have been seen, though a number of localities are represented. Records are available from nine northeastern states, Illinois, Indiana, Maryland, Michigan, Missouri, New York, Ohio, South Dakota, and Virginia, and from the Province of Ontario. Western record: Custer, S. Dak., July 15, 1924 (F. M. Hull) [South Dakota State College Coll.].

8. **Elachiptera (Elachiptera) willistoni**, n. sp.
(= *E. flavida* and *E. attenuata* of United States records)

Reddish yellow species, only the ocellar tubercle, a divaricate spot on the occiput, dorsal margin of the third antennal segment, and arista, black or dark brown; fore tibia and fore tarsus brown, and apices of other tarsi slightly infuscated.

Front moderately broad, twice the width of an eye and half the width of the head; frontal triangle smooth and polished, both triangle and ocellar tubercle without a trace of pollen, the triangle nearly touching the eyes at the vertex and the apex reaching the anterior margin of the front, the sides slightly convex; in profile the long axis of eye slightly diagonal; width of cheek 0.15–0.2 times the height of the head, commonly 0.17; arista broadly flattened for its entire length, sides parallel nearly to apex.

Thorax slender, narrower than the width of the head and 1.2 times as long as broad, shining and polished except for the sparsely pollinose scutellum, a narrow prescutellar band of pollen, and a little pollen along the lower margin of the notopleuron; bristles long and strong, including 1+1 notopleural, 1 postalar, 1 posterior dorsocentral, and 1 apical scutellar, the humeral and 1 subapical scutellar weak and little longer than hairs; scutellum trapezoidal, 0.8 times as long as broad at base, the apical bristles widely separated at the apical angles (Fig. 10).

Wing venation as usual in the genus; second costal sector slightly longer than the third; third vein nearly straight, third and fourth veins diverging from the base, fore crossvein opposite or only slightly beyond the middle of the discal cell.

Length, 2 mm.

Type.—Male, U.S.N.M. no. 58862.

Holotype male, and allotype, Orlando, Fla., February 9, 1918 (G. G. Ainslie). In the collection of the U. S. National Museum. Paratypes: FLORIDA: 19 (6 ♂♂, 13 ♀♀), Orlando, February 7–19, 1918 (G. G. Ainslie); 1 ♀, Gainesville, February 23, 1918 (G. G. Ainslie); 1 ♂, Paradise Key, February 23, 1919 (Schwarz and Barber); 1 ♂, Orlando, April 30, 1908 (Russell), "bred from onion" (det. Coquillett as *E. flavida*); 2 (♂, ♀), Lake Worth, and 1 ♂, Biscayne Bay (Mrs. Slosson) (det. Coquillett as *E. flavida*) [U.S.N.M.].

TEXAS: 1 ♂, Santa Maria, April 1, 1908 (McMillan), "bred from celery" (det. Coquillett as *E. flavida*); 8 (1 ♂, 7 ♀♀), Brownsville (E. C. Greene) (det. Malloch as *Crassiseta flavida*); 1 ♂, Brownsville, November 20, 1939 [U.S.N.M.]; 1 ♂, Hidalgo County, August 2, 1928 (R. H. Beamer) [Kansas Univ. Coll.].

Elachiptera willistoni is very close to several Neotropical species with all reddish body color. The specimens from the southern United States have in the past been determined either as *E. flavida* (Williston) or *E. attenuata* Adams, but the former has a slender, scarcely thickened arista and the latter has the arista flattened at the base but strongly attenuated distally. Available specimens of *attenuata* also show a slightly narrower cheek than in *willistoni*, the width measuring only 0.097–0.11 times the height of the head.

This is the form which I referred with some doubt to *E. attenuata* in 1938 (Journ. New York Ent. Soc. **46**: 425), based on specimens from Brownsville, Tex., and Everglades and Lakeland, Fla.

9. Elachiptera (E.) sp.

1 ♂, Benson, N. C., August 9, 1934 (R. H. Beamer) [Kansas Univ. Coll.].

Apparently a new species, but the only example before me is headless. The species will not be described until additional material makes it possible to state the important head and antennal characters, but it is included here to make the key as complete as possible for the Nearctic species. In addition to the characters listed in the key, the abdomen is strongly rugose, appearing pitted when viewed from behind.

10. Elachiptera (E.) sp.

1 ♀, Washington, D. C., August 5 (J. M. Aldrich) [U.S.N.M.].

The example agrees with *E. willistoni* in all particulars except the presence of a broad median stripe of fine, bright gray pollen. Because of the consistency of this character elsewhere in the genus, it is reasonably certain that an undescribed species is involved here. In view of the single difference, however, and the possibility that it might be an aberrant condition in this case, I shall defer naming the species until an adequate series is available. As with the preceding form, it has been included in the key for the sake of completeness.

11. Elachiptera (E.) tau, n. sp.

Yellow to orange, with the arista, apex of third antennal segment at base of arista, an ocellar spot, a broad transverse band on the occiput between the eyes, a T-shaped mark covering the anterior fourth of the mesonotum and a broad stripe between the dorsocentral grooves, entire scutellum, metanotum, and the abdomen mesally and laterally, black; thorax and frontal triangle orange, rest of the head yellow, legs pale yellow.

Front approximately as long as broad, the width at the vertex not quite half the width of the head (0.45); frontal triangle and ocellar tubercle entirely polished, without pollen, the base of the triangle only 0.8 times the width of the front, the apex reaching the anterior margin of the front; cheek narrow, only 0.14 times the height of an eye; eye large, long axis nearly vertical; arista broadly flattened, the sides parallel nearly to the tip.

Mesonotum gray pollinose on the entire surface, though sparsely so in the intra-alar positions; scutellum even more strongly developed than in *costata* (cf. Fig. 12), elongate conical, 1.25 times as long as broad at base, with three pairs of strong marginal tubercles, the apical pair twice as long as broad at base, and closely approximated, separated by the width of the base of one tubercle.

Abdomen rugose, as described for *Elachiptera* sp. from North Carolina.

Veins yellow; second costal sector 1.16 times the third sector; third vein nearly straight, third and fourth slightly divergent from their bases; fore crossvein beyond the middle of the discal cell, as 15:10.

Length, 2.25 mm.

Holotype.—Female, Benton, Ky., June 30, 1939 (R. H. Beamer). Type in the Snow Collection, University of Kansas.

Besides the distinctive color pattern, this species has the longest scutellum and strongest scutellar tubercles of any American species of the genus.

Elachiptera punctulata Becker

Elachiptera nigroscutellata Becker, Ann. Mus. Nat. Hung. 10: 80. 1912.

E. punctulata Becker (=*nigroscutellata* Becker, 1912, preoc.), *ibid.* 10: 645. 1912.

Becker described the species from a single specimen in the Winthem Collection in Vienna, said to be from North America. I have seen the type, and it bears only a small square of dark blue paper and a label, "Coll. Winthem." It is unlike anything that I have seen in thousands of American specimens, the black scutellum being short and broadly rounded with two pairs of long, fingerlike, yellow tubercles arising from the lower margin of the scutellum. The cheeks are linear. In these characters it is like the Ethiopian *Cyrtomomyia* Becker, and it is close to the genotype, *C. pulchra* Becker. I believe that *punctulata* was listed erroneously as North American, and that it is more probably of African origin. It was included in my key to the reddish species of *Elachiptera* of the Western Hemisphere (Journ. New York Ent. Soc. 46: 421. 1938), but at that time I had not studied the African fauna and did not recognize the true affinities of the species. If it should ever be discovered as a rare and aberrant American species, it will run in the present key to *E. tau*, from which it can easily be separated by the form of the scutellum and scutellar tubercles.

Recognition of the status of *punctulata* is especially important because of the discovery of the new American species with black scutellum and predominantly reddish thorax (*E. tau*). The latter is a typical *Elachiptera*, and is related to *costata* and *erythropleura*, but from the generalized description of *punctulata* one might easily have confused the two.

12. **Elachiptera (E.) costata** (Loew)

Crassiseta costata Loew, Berl. Ent. Zeitschr. 7: 33. 1863. (Centuria III, No. 62.) (District of Columbia.)

The name *costata* is here definitely restricted to what has always been regarded as the "typical form," that with entirely black thorax. The so-called "variety" with reddish pleura is found to consist of two unnamed species, a relatively common one here described as *erythropleura*, and a less frequently collected form which I have called *angusta*.

Loew knew the form with red pleura, but he regarded such specimens as immature individuals of *costata*. The type series of *costata*, in the Museum of Comparative Zoology, contains one female with black pleura and a male and female with reddish pleura; the first female is hereby selected as lectotype of *Crassiseta costata* Loew.

The typical form of *costata* is further distinguished from *erythropleura* by having the disk of the mesonotum broadly pollinose, only the sides narrowly without pollen and shining. In no case have I found the pollen divided into stripes as in *erythropleura*, except of course in badly rubbed specimens which may appear striped because of pollen remaining in the dorsocentral depressions. The strong scutellar tubercles (Fig. 12) are characteristic of *costata*, *erythropleura*, and *tau*, besides a species left unnamed for the present.

Distribution: Common and widely distributed throughout eastern North America, and west to Arizona and Idaho. Specimens have been determined from 28 states, the District of Columbia, and five Canadian provinces: Arizona, Arkansas, Colorado, Idaho, Illinois, Indiana, Iowa, Kansas, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, New Jersey, New Mexico, New York, North Carolina, Ohio Oklahoma, South Dakota, Texas, Utah, Virginia, Washington; Alberta, Manitoba, Ontario, Quebec, Saskatchewan.

13. **Elachiptera (E.) erythropleura**, n. sp.

Elachiptera costata var. "a" Becker, Ann. Mus. Nat. Hung. 10: 78. 1912.

Crassiseta costata var. Sabrosky, Trans. Amer. Ent. Soc. 61: 245. 1935.

Like *costata*, especially in the form of the scutellum, but the pleuron reddish yellow, and the gray pollen on the mesonotum typically in three stripes, on the median and dorsocentral lines.

Male, female.—Head predominantly yellow, only the occiput, frontal triangle except for apex and basal corners, broadly flattened arista, and third antennal segment narrowly at base of arista, black; cheek narrow, one-fifth to one-sixth the height of an eye and one and one-half times the breadth of the arista: front broad, its length only 0.9 times its width at the vertex; frontal triangle large, occupying almost the entire front, the apex attaining the anterior margin of the front and the sides convex; both triangle and ocellar tubercle smooth and polished, without trace of pollen.

Mesonotum and scutellum black; pleuron predominantly reddish yellow, only the propleuron and metapleuron black; prosternum yellow; mesonotum chiefly shining, typically with three stripes of bright gray pollen on the median (acrostichal) and dorsocentral lines; scutellum as in *costata* (cf. Fig. 12), slightly longer than broad (1.05–1.2 times), with three pairs of marginal tubercles, the apical pair strongest, and each of the latter one and one-half times as long as broad at base. Abdomen shining brown to black.

Legs yellow, typically the fore tibia with a narrow and hind tibia with a broad median brown band, fore tarsus and the apical segment of mid and hind tarsi more or less browned.

Wing clear, veins brown, second costal sector nearly one and one-half times the third sector, third and fourth longitudinal veins parallel, fore crossvein joining the discal cell slightly beyond the middle. Halter pale yellow.

Length, 2–2.25 mm.

Type.—Male, U.S.N.M. no. 58863.

Holotype, male, and allotype, East Lansing, Mich., May 25, 1937 (C. W. Sabrosky). Type and allotype deposited in the U. S. National Museum. Paratypes, 152 specimens (61 ♂♂, 91 ♀♀). COLORADO: 1 ♀, Holly, September 6, 1938 (D. E. Hardy) [Kans. Univ.]. DISTRICT OF COLUMBIA: 3 (1 ♂, 2 ♀♀), Washington, April 8,

1945 (M. T. James) [James Coll.]; 6 (4 ♂♂, 2 ♀♀), Washington, August 14, 1906, July 11, May 1, 1922, and August 5 [U.S.N.M.]. GEORGIA: 1 ♂, Prattsburg, July 25, 1930 (P. W. Oman) [Sabrosky Coll.]; 1 ♀, Perry, March 17, 1945 (P. W. Fattig) [U.S.N.M.]. ILLINOIS: 19 (11 ♂♂, 8 ♀♀), Algonquin, Carlinville, Carbondale, Centerville, Dubois, Forest City, Freeport, Golconda, Grand Tower, Muncie, Urbana, and White Heath, various dates, April 3-November 11 [Illinois Nat. Hist. Survey and U.S.N.M.]. INDIANA: 1 ♀, Vincennes, May 9 (Aldrich); 27 (11 ♂♂, 16 ♀♀), Lafayette, April 12–October 22 (Aldrich) [U.S.N.M.]. IOWA: 1 ♂, Jefferson County, May 18, 1934 (H. Knutson); 1 ♀, Henry County, May 20, 1935 [Sabrosky Coll.]. KANSAS: 1 ♂, Lawrence (Aldrich) [U.S.N.M.]; 2 ♀♀, Manhattan, April 2 and October 8, 1932 (Sabrosky) [Sabrosky Coll.]. MARYLAND: 17 (8 ♂♂, 9 ♀♀), Cabin John, Glen Echo, Riverdale, and Plummers Island, April 28-October 21 (Shannon, McAtee, Malloch) [U.S.N.M.]. MASSACHUSETTS: 2 ♀♀, Beverly, September 10, 1870 (Burgess); 1 ♀, Cambridge, April 27, 1870 [U.S.N.M.]. MICHIGAN: 4 (3 ♂♂, 1 ♀), Detroit, April 18, 1938, and May 11, 1941 (G. Steyskal); 1 ♀, Lapeer, August 5, 1936 (Steyskal) [Steyskal Coll.]; 1 ♀, Battle Creek (Aldrich) [U.S.N.M.]; 6 (5 ♂♂, 1 ♀), East Lansing, April 28–June 4 (Sabrosky); 2 (♂, ♀), Lapeer, May 30, 1937 (Sabrosky); 1 ♂, Albion, May 16, 1936 (Sabrosky) [Sabrosky Coll.]. MISSOURI: 1 ♂, Atherton, September 18, 1915 (Aldrich) [U.S.N.M.]. NEW JERSEY: 1 ♀, New Brunswick, July 20 [Rutgers Univ. Coll.]. NORTH CAROLINA: 6 (1 ♂, 5 ♀♀), Raleigh, June 9–17, 1942 (C. S. Brimley); 1 ♀, Wilmington, March 7, 1939 (Harris and Wray) [North Carolina Dept. Agr. Coll.]. OHIO: 1 ♀, Columbus, July 9, 1886 (Wm. B. Alwood) [U.S.N.M.]; 7 (2 ♂♂, 5 ♀♀), Summit County, June 24–September 1 (L. J. Lipovsky) [Kansas Univ. Coll.]. PENNSYLVANIA: 1 ♀, Germantown, May 2, 1909 (Harbeck); 2 ♀♀, Philadelphia, April 25, 1897 (G. M. Greene) [U.S.N.M.]. SOUTH DAKOTA: 4 (1 ♂, 3 ♀♀), Elk Point, September 29, 1915 [U.S.N.M.]. TENNESSEE: 1 ♀, Knoxville, March 30, 1917 (Aldrich); 1 ♀, Union City, (G. I. Reeves); 1 ♀, Reelfoot Lake, April 14, 1944 [U.S.N.M.]; 8 (4 ♂♂, 4 ♀♀), Clarksville, July 1–15, 1939 (D. E. & A. T. Hardy, J. D. Beamer) [Kansas Univ. Coll.]. VIRGINIA: 1 ♀, Falls Church, May 17 (N. Banks) [Sabrosky Coll.]; 17 (4 ♂♂, 13 ♀♀), Rosslyn and Dead Run, Fairfax County, April 21–November 18 (R. C. Shannon) [U.S.N.M.].

I have also seen examples from Minnesota, North Dakota, and Rhode Island, but these are not at present available.

This species has usually been recorded as an unnamed color variety of *costata*, but I am convinced that the different pattern of pollen on the mesonotum and the distinctive pleuron mark it as a separate species. In *costata*, also, the head is much darker, the face and cheeks are usually well infuscated, and the median clypeal plate (anteclypeus of Townsend) is shining black. Loew knew the form with red pleuron when he described *costata*, but he considered such individuals to be immature (cf. discussion under *costata*).

The characteristic color pattern of this and the following species (*angusta*) resembles that of *E. sibirica* (Loew) of Europe and Asia. All three seem to be related, but they are definitely distinct. The European species has the humeri, propleuron and sides of the mesonotum reddish yellow, the ocellar tubercle gray pollinose, and the entire mesonotum gray pollinose except for a small area on the anterior slope just behind the head.

Variation: In a few specimens, the sides of the frontal triangle are margined with red, leaving only the central area black. In such individuals the humeri may also be partly reddish. In pale specimens (possibly somewhat teneral), the legs seem entirely yellow. The three mesonotal stripes of pollen vary in width, but are almost invariably distinct; in only three atypical specimens is the pollen more generally distributed and not clearly trivittate.

14. **Elachiptera (E.) angusta**, n. sp.

Near *E. erythropleura*, but without the stripes of pollen on the mesonotum, with narrower front, and with short, rather inconspicuous scutellar tubercles.

Male, female.—Color, general structure, wing venation, and size as described for *erythropleura*, differing in the following particulars:

Head longer than in *erythropleura*, the front slightly longer than broad (1.1 times), the frontal triangle narrower than in that species and contributing to the obviously longer appearance of the front; apex of the triangle

barely failing to attain the anterior margin of the front; cheek narrower, barely wider than the arista and one-eighth to one-ninth the height of an eye; mesonotum with no trace of pollen in the median and dorsocentral positions, only the notopleuron and a narrow prescutellar band sparsely gray pollinose, as is the scutellum; scutellum strongly narrowed in dorsal aspect, its length and width subequal (0.94–1.1 times), three pairs of scutellar tubercles close together on the distal half, the tubercles obviously smaller than in *costata* and *erythropleura*, the largest tubercle only about as long as broad.

Holotype.—Male, Woods Hole, Mass., September 1922 (A. H. Sturtevant). Allotype, Urbana, Ill., June 21, 1888 (Marten; Accession No. 14, 488; "swept from catalpa"). Paratypes: 2 ♂♂, Woods Hole, Mass., September 1922, and July 5–21, 1922 (both collected by Sturtevant). Holotype and one paratype in the American Museum of Natural History, allotype in the collection of the Illinois Natural History Survey, one paratype in the U. S. National Museum.

From the few available specimens, this species seems to be much less common than *erythropleura*, though the similarity in the distinctively reddish pleuron would undoubtedly have caused it to be recorded along with that species as a color variety of *costata*. Greasy specimens of *erythropleura* will appear to be without pollen and hence might be confused here; if the specimens are not in good condition, one should always check the scutellar tubercles to avoid misidentifications.

15. **Elachiptera (E.) nigriceps** (Loew)

Crassiseta nigriceps Loew, Berl. Ent. Zeitschr. 7: 33. 1863. (Centuria III, No. 63.) (Pennsylvania.)

Male, female.—Head dark, the face and cheek usually predominantly black; frontal triangle large and broad, the sides convex (Fig. 13), both triangle and ocellar tubercle entirely polished black and without pollen; front broad, the length usually 0.85–0.95, occasionally up to 1.0, times the width at the vertex; palpus bright yellow in male, brown to black in female; arista broad, flat and parallel-sided to the tip (Fig. 7), sword-shaped, one-half to four-fifths as wide as the height of the cheek, slightly narrower in the male than in the female.

Thorax polished black except for inconspicuous gray pollen on the notopleuron and about the base of the wing, with piliferous punctures in slightly irregular rows, about two rows between the median and each dorsocentral row; mesonotum nearly square in appearance, and measuring 0.90–1.04 times as long as broad; scutellum short and broadly rounded, 0.75–0.9 times as long as width at base, with three pairs of minute tubercles bearing the short marginal scutellar bristles (Fig. 11); prosternum black.

Legs predominantly yellow, strongly marked with black, the black areas varying somewhat in extent between the sexes and among individuals of the same sex, but always with a fundamental pattern as follows: Distal third of the mid femur except for the knee, distal one-half to two-thirds of the hind femur, proximal one-half to two-thirds of the hind tibia, a variable distal portion of the fore tibia, fore tarsus, and the distal segment of the mid and hind tarsi. Occasional individuals may be paler, especially if teneral, or darker than the indicated extremes, but the constant presence of some black distally on the mid and hind femur and hind tibia seems to mark this form.

Length, 2.25–2.5 mm.

Very common and widely distributed in eastern North America, with a few specimens known from as far west as Manitoba and Washington. Records are available from the Canadian Provinces of Manitoba, Ontario, and Quebec; from the District of Columbia, and from 27 states (predominantly eastern), as follows: Alabama, Colorado, Illinois, Indiana, Iowa, Kansas, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, New Jersey, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Virginia, Washington, and Wisconsin.

16. **Elachiptera (E.) pechumani,** n. sp.

Male, female.—As described for *E. nigriceps*, but the frontal triangle slightly shorter and its sides less convex, not occupying as much of the front as that of *nigriceps;* front yellowish to orange, and face yellow on sides only, centrally black, the general color of the head brighter than in *nigriceps;* palpi deep yellow to orange in both sexes; all coxae and femora bright yellow, the fore and hind tibiae and fore tarsus black, hind tarsus browned distally. To the eye,

a series of this form appears slightly larger and sturdier than specimens of *nigriceps*.

Type.—Male, U.S.N.M. no. 58864.

Holotype male, and allotype, 6 miles south of Middleport, N. Y., July 3, 1941 (L. L. Pechuman), "larvae breeding in large numbers in the base of the flowers of the wild iris, *Iris versicolor*." Types and paratypes deposited in the U. S. National Museum through the courtesy of Dr. Pechuman. Paratypes: 39 (21 ♂♂, 18 ♀♀), same data as type [U.S.N.M., Cornell Univ., Pechuman Coll., and Sabrosky Coll.]; 2 ♀♀, 13 miles south of Lapeer, Mich., May 30, 1937 (C. W. Sabrosky); 1 ♂, Eaton Rapids, Mich., May 30, 1942 (Sabrosky) [Sabrosky Coll.]; 1 ♂, Algonquin, Ill., September 19, 1894 [U.S.N.M.].

17. **Elachiptera (E.) angustifrons,** n. sp.

Species somewhat intermediate between *nigriceps* and *costata*, differing from the former in having both frontal triangle and scutellum long and relatively narrow and all femora yellow, and from the latter in lacking pollen on the disk of the mesonotum.

Male, female.—Frontal triangle, occiput, lower margin of cheek, face centrally, and arista black, the rest of the head yellow, front deep yellow to orange, palpi yellow in both sexes; triangle and ocellar tubercle entirely polished black; front obviously longer than broad (Fig. 14), the length 1.1 times the width at vertex, the triangle likewise appearing longer and narrower than in species of the *nigriceps* group; eye distinctly emarginate opposite the lunule; cheek narrow, only 0.15 times the height of an eye; arista broad and flat, parallel-sided nearly to apex, its width almost equal to the height of the cheek.

Thorax as described for *nigriceps*, but obviously narrower, the length 1.09–1.1 times the width; scutellum decidedly longer and narrower than in *nigriceps*, 1.1–1.2 times as long as broad at base, the three pairs of marginal scutellar tubercles slightly longer than those of *nigriceps* but not as long and distinct as in *costata* (cf. Figs. 11, 12). Abdomen dark brown, with a large yellow spot above at the base, the basal segment elongated, occupying nearly half the length of the abdomen.

Legs predominantly bright yellow, the pattern as described for *pechumani*.

Length, 2–2.25 mm.

Type.—Male, U.S.N.M. no. 58865.

Holotype male, and allotype, Orlando, Fla., February 18, 1918 (G. G. Ainslie) [U.S.N.M.]. Paratypes: 5 (3 ♂♂, 2 ♀♀), same data as type; 2 (♂, ♀), Wilmington, N. C., June 29 (C. S. Brimley) [Sabrosky Coll.]; 1 ♀, Paradise Key, Fla., February 21, 1919 (Schwarz and Barber); 2 (♂, ♀), Bertrandville, La., February 12, 1944; 2 ♀♀, Chesapeake Beach, Md., July 27, 1913 (R. C. Shannon); 1 ♂, Near Plummers Island, Md., April 7, 1915 (Shannon); 1 ♀, Cabin John Bridge, Md., April 28, 1912 (Knab and Malloch); 1 ♂, San Antonio, Tex., April 8, 1907 (F. C. Pratt) [U.S.N.M.].

18. **Elachiptera (E.) angustistylum,** n. sp.

Male, female.—As described for typical *nigriceps*, but the arista not as broadly flattened, in the female only two-fifths or less the height of the cheek, in the male slender and only slightly thickened, and in both sexes gradually tapering from base to tip, not parallel-sided as in *nigriceps* (Fig. 8, compared with Fig. 7).

Length, 2–2.25 mm.

Type.—Male, U.S.N.M. no. 58866.

Holotype male, and allotype, Spanish Fork, Utah (D. Elmo Hardy). Types and paratypes deposited in the U. S. National Museum through the courtesy of Dr. Hardy. Paratypes: 8 (1 ♂, 7 ♀♀), same data as type [Kansas Univ. and Sabrosky Coll.]; 1 ♂, Cedar, Utah, July 30, 1929 (G. F. Knowlton); 4 ♀♀, Geneva, Utah, April 28, 1933 (Knowlton), Hyde Park, Utah, June 11, 1938 (D. E. Hardy and G. S. Stains), Wellsville, Utah, May 11, 1939 (Knowlton), and Lakeview, Utah, September 20, 1930 (Knowlton) [Utah State Agr. College Coll. and U.S.N.M.]; 2 ♂♂, Scappoose, Oreg., April 23, 1938 (Schuh and Gray); 1 ♀, St. Helena-Scappoose, May 6, 1938 [Sabrosky Coll.].

Because of the unusually slender arista, not at all flattened, the males may be mistaken for the genus *Oscinella*, until one becomes used to the characteristic habitus of the genus *Elachiptera*, and to the character of the two pairs of well-developed fronto-orbital bristles.

This form is like typical *nigriceps* in all respects but the arista, and because of the relatively small difference might be considered only a subspecies, with a western range. Specific differentiation does not necessarily require large

differences, however, and in the absence of any evidence of subspeciation in the present case, I have regarded it as a distinct species.

THE DECIPIENS GROUP

The "*decipiens* group," which includes the remaining species, comprises a number of closely related forms which are characterized by a *nigriceps*-type of scutellum (Fig. 11: flat, rugulose disk, in dorsal view broadly rounded apically with 2 or 3 pairs of small tubercles), and usually the ocellar tubercle bright gray pollinose and mesonotum with 2 or 3 distinct stripes of gray pollen. In *californica* Sabrosky, the stripes are distinct but the ocellar tubercle is shining, and in *penita* Adams the stripes are absent but the ocellar tubercle is strongly pollinose.

In the Palearctic region, the group is represented by *Elachiptera cornuta* (Fallén) and its "varieties" (five recognized by Duda, the latest reviser). Typical *cornuta* and its "varieties" seem to parallel the forms of the *decipiens* group in North America, and it is possible that some of the European and American forms are the same and should be given the same name. Only material of typical *cornuta* is available to me, however, and while *vittata* (=*bilineata* Adams) is close, the slight differences have led me to continue to recognize the latter as distinct. *Elachiptera decipiens*, which is especially abundant in northwestern North America (Alaska to Colorado), and which might be expected to be a Holarctic species, seems to resemble *E. cornuta* var. *strobli* Corti (1909), but I have no examples of the latter for comparison. If they are the same, it should be noted that the name *decipiens* (1863) has priority by many years, and we are thus justified in any case in using the name *decipiens* here. The race or species which I have called *E. flaviceps* is apparently paralleled in Europe by *cornuta* var. *rufifrons* Duda; again, no material is available for critical comparison.

In view of Duda's classification of apparently parallel forms in Europe as merely "varieties" of one common and widespread species, the question also might well be raised whether the American species of the *decipiens* group are only varieties of one species. In North America, however, (1) the segregates recognized here differ from each other in more than one character, (2) they show reasonable uniformity within the segregate in their significant characters, and (3) the available evidence suggests that the several segregates may have characteristic ranges. It is concluded, therefore, that the American forms are either good species, or at the very least, recognizable geographic races (i.e., subspecies).

In most members of this group, the two dorsocentral stripes of pollen are broad and distinct, but the median or acrostichal stripe is narrow, often tapered posteriorly, and frequently appearing to be absent. In general, in *formosa* the median stripe is relatively broad, in *vittata* it is usually present and evident though narrow, and in *decipiens* it is usually not at all evident and the dorsocentral lines are also narrow. Some intraspecific variation exists in the width of the stripes, however, and the appearance may be further influenced by the condition of the specimens.

19. Elachiptera (E.) formosa (Loew)

Crassiseta formosa Loew, Berl. Ent. Zeitschr. 7: 32. 1863. (Centuria III, No. 61.) (District of Columbia.)

This is one of the rarest species of the genus in North America, judged from the paucity of records. The unique feature of the strongly incrassate hind femur is strikingly distinct. Unfortunately, no published description or key has described it with sufficient exactness to avoid possible confusion with *E. decipiens* or other species in which the hind leg is normally slightly enlarged.

Arista broad and flat as in *vittata;* frontal triangle polished black, but ocellar tubercle and posterior corners of triangle gray pollinose; triangle long, its apex barely failing to reach the anterior margin of the front; cheek narrow, only 0.12 the height of an eye; palpus yellow in both sexes. Thorax black, predominantly shining and polished, the disk of the mesonotum with three distinct stripes of gray pollen, the dorsocentral stripes broad, the median narrower, broadest anteriorly and tapering posteriorly, ending opposite the postalar calli, the prescutellar space between the dorsocentral stripes polished and without pollen; humeral

callus predominantly shining; mesonotal hairs more numerous than in the *nigriceps* and *costata* groups, with 4 or 5 irregular rows of piliferous punctures between the median and each dorsocentral position; mesonotum longer than broad, by over 1.15 times; scutellum gray pollinose, its outline like that of *nigriceps*, moderately short and broadly rounded, 0.9 times as long as broad at base, with three pairs of short and inconspicuous marginal tubercles, the tubercles equidistant from each other. Abdomen with basal segment elongate, longer than the next two combined and nearly half the total length of the abdomen, and yellow with sides narrowly brown; second abdominal segment dorsally chiefly yellow with a median brown spot; remaining segments brown. Fore and middle legs chiefly yellow, the fore tibia distally and fore tarsus dark, hind leg reddish yellow with darker tibia; hind femur markedly incrassate, its greatest width 2.0–2.8 times the diameter of the hind tibia and 1.5 times the greatest width of the fore femur.

I have seen only 10 specimens of true *formosa*, in addition to the two cotype females in the Museum of Comparative Zoology: ♂, North Carolina; ♂, Atlantic Beach, Fla. (Mrs. A. T. Slosson); ♀, Lafayette, Ind., August 8 (J. M. Aldrich) [U.S.N.M.]; ♀, Havana, Ill., May 1, 1912 [Ill. Nat. Hist. Survey]; 4 ♀ ♀, Mount Vernon, Va., February 28, 1915 (W. L. McAtee); 1 ♀, Dyke, Va., May 28, 1915; 1 ♀, North Carolina [Malloch Coll.].

A specimen from Mount Washington, N. H. (Mrs. Slosson) [U.S.N.M.], determined by Coquillett as *formosa*, is actually *E. vittata* Sabrosky. This specimen is undoubtedly the basis for the record published by Mrs. Slosson (Ent. News **7**: 264. 1896) and repeated by Johnson (*List of the Diptera or two-winged flies of New England:* 279. 1925).

20. Elachiptera (E.) vittata, n. name

Crassiseta bilineata Adams, Kansas Univ. Sci. Bull. **2**: 453. 1904. (Arizona.)

Elachiptera bilineata (Adams) Becker, Ann. Mus. Nat. Hung. **10**: 79. 1912.

Preoccupied by *Chlorops bilineatus* Bigot (Bull. Soc. Zool. France **16**: 279. 1891), referred to *Elachiptera* by Becker (1908, 1910), as a synonym of *E. bimaculata* (Loew).

This species is characterized by the broad, flat arista, short frontal triangle, gray pollinose ocellar tubercle, 2 or 3 stripes of gray pollen on the mesonotum, and broadly rounded scutellum with 2 or 3 pairs of small marginal tubercles. The legs are predominantly yellow to reddish yellow, with some infuscation on the fore tibia distally, the fore tarsus, hind tibia, and hind femur toward the knee, rarely extensively infuscated. Some variation has been observed in the number of rows of hairs between the median and dorsocentral lines, 1 to 3 rows, and this varies the appearance from relatively sparsely to relatively densely haired.

It is the most widely distributed species of the *decipiens* group, for records are available from New York and New Jersey to California across the northern United States. The northward limits are uncertain, but it is interesting to note that all Alaskan material of the *decipiens* group thus far examined has been only typical *decipiens*.

The holotype, a female from Oak Creek Canyon, Ariz., now in the Snow Collection at the University of Kansas, has been personally examined.

Of all American forms, *vittata* is closest to the European *E. cornuta* (Fallén). I have been unable to satisfy myself that the two are the same species, however, and *vittata* has thus been regarded here as a distinct species.

Distribution: Records are available from Alberta, Manitoba, Saskatchewan, and from 14 states: Arizona, California, Idaho, Maryland, Michigan, Montana, New Hampshire, New Jersey, New York, Nevada, Ohio, Oregon, Utah, and Washington.

21. Elachiptera (E.) californica, n. sp.

As characterized in the key, and as described for *E. vittata*, differing from that species only in having the ocellar tubercle polished, not pollinose.

Type.—Male, U.S.N.M. no. 58867.

Holotype, male, Ellery Lake, Tioga Pass, Calif., 9,400 ft., July 3, 1927 (J. M. Aldrich). Allotype, Sequoia National Park, Calif., June 11, 1935 (P. W. Oman), Type and allotype in the U. S. National Museum. Paratypes: 1 ♀, Carmel, Calif., July 8, 1938 (M. Cazier); 2 ♂ ♂, San Jacinto, Calif., July 21, 1929 (R. H. Beamer) [Kansas Univ. and Sabrosky Colls.].

22. Elachiptera (E.) penita (Adams)

Crassiseta penita Adams, Journ. New York Ent. Soc. **16**: 152. 1908. (Wisconsin.)

I have seen only one specimen that can be referred here, a female, Falmouth Heights, Mass., August 13, 1924 [Amer. Mus. Nat. Hist.]. It is 3 mm in length, somewhat larger than the other species of *Elachiptera*, and with the following characteristics: Arista narrow, only slightly broadened basally and strongly attenuated from base to apex; frontal triangle long, its apex nearly reaching the anterior margin of the front; ocellar tubercle gray pollinose; front relatively long, not appearing broad and square as in the other species of the group (except *formosa*), by actual measurement the length 1.0–1.07 times the width at the vertex; mesonotum without pollinose stripes, the disk polished black, the humeri, notopleura, supra-alar area, a narrow prescutellar band, and the scutellum, gray pollinose; median and dorsocentral lines and the entire posterior slope of the mesonotum punctured and rugose; scutellum shorter than broad, the length 0.9 times the width at base and appearing subtruncate.

I have not seen Adams's cotypes (two males from Wisconsin), but Dr. Aldrich examined them in the University of Arkansas Collection in 1915. He thought that they were probably *formosa* Loew, but he noted that there were no gray stripes on the dorsum. This fact, with several points mentioned in the original description (large size, large triangle, etc.) makes it reasonably certain that the above specimen represents *penita* Adams. It is not a synonym of *formosa*, but a distinct species.

23. Elachiptera (E.) knowltoni, n. sp.

Male, female.—As described for *E. nigriceps*, except as follows: Head lighter in color, the front, face except for central depression, and lower and anterior margins of cheek, yellow; front broad, the length usually 0.92–0.96 times the width at vertex; frontal triangle shorter than in *nigriceps*, the apex not reaching the anterior margin of the front and sides less convex, obviously occupying less of the front than that of *nigriceps;* triangle polished black, but ocellar tubercle distinctly gray-pollinose; palpus bright yellow in both sexes; arista in both sexes only slightly thickened, short pubescent, not at all flattened, and thus resembling that of *Oscinella;* scutellum short and broad, 0.8–0.87 times as long as broad at base.

Legs usually rather extensively infuscated, all femora and tibiae, except bases and apices, brown to black, fore tarsus black and other tarsi browned distally: in the palest specimen, the mid and hind femora broadly yellow at each end, and the fore femur infuscated only on outer surface.

Length, 2.25–2.5 mm.

Type.—Male, U.S.N.M. no. 58868.

Holotype male, and allotype, Randolph, Utah, September 21, 1938 (G. F. Knowlton and F. C. Harmston). Type and allotype deposited in the U. S. National Museum through the courtesy of Dr. Knowlton. Paratypes: 2 (♂, ♀), same data as type [Utah Agr. College Coll.]; COLORADO: 1 ♀, Electric Lake, La Plata County, June 28–30, 1919, about 8,400 ft. [Amer. Mus. Nat. Hist.]: 1 ♀, Holly, September 6, 1938 (D. E. and A. Hardy) [Kansas Univ. Coll.]: 1 ♀, Monument, August 6, 1938 (M. T. James, Urless Lanham) [James Coll.]. IDAHO: 1 ♂, Kellogg, August 14, 1926, altitude 2,305 ft. (R. W. Haegele) [Univ. of Idaho]. MONTANA: 1 ♂, Drummond, August 11, 1931 (R. H. Beamer) [Kansas Univ. Coll.]. NEVADA: 1 ♀, Austin, August 12, 1940 (R. H. Beamer) [Kansas Univ. Coll.]. UTAH: 1 ♀, Blue Creek, September 2, 1938 (Knowlton and Harmston); 1 ♀, Salina, August 16, 1938 (Knowlton and Harmston); 1 ♀, Lewiston, April 27, 1938 (Knowlton and Hardy); 1 ♂, Juab, April 23, 1935 (Knowlton and C. F. Smith); 1 ♂, Hurricane, August 13, 1938 (Knowlton and Harmston) [Utah Agr. College Coll.]; 1 ♀, Spanish Fork (D. E. Hardy) [U.S.N.M.].

24. Elachiptera (E.) decipiens (Loew)

Oscinis decipiens Loew, Berl. Ent. Zeitschr. 7: 40. 1863. (Centuria III, No. 76.) (Sitka, Alaska.)

Diagnosis: Arista usually somewhat flattened nearly to the apex, sometimes flattened basally and narrowing on the apical half or three-quarters, but in any case decidedly narrower than in *vittata* (cf. key, couplet 21); frontal triangle short, approximately three-fourths the length of the front; ocellar tubercle gray-pollinose; front appearing short and broad, or nearly square, by actual measurement the length only 0.87–0.95 the width at the vertex; mesonotum typically with two relatively narrow dorsocentral stripes of gray pollen. The species usually has a dark appearance, for the yellow on the head is dark, the posterior portions of the front and cheeks are more or less infuscated, and the legs are usually

rather extensively browned, the femora and tibiae more or less predominantly so with varying extent of reddish yellow at base and apex of each. Alaskan specimens are usually darker than those from localities in the United States and southern Canada.

This is definitely not typical *cornuta* Fallén, for the arista is narrower and the legs darker. Whether it is the same as some of the described "varieties" of *cornuta* remains to be determined. As already pointed out, it seems to be near *cornuta* var. *strobli* Corti (1909), and if they prove to be the same, Loew's name has priority.

The considerable amount of Alaskan material that I have seen in the genus *Elachiptera* has consisted entirely of *decipiens*, except for an occasional specimen of *Eribolus sudeticus*. Other than Alaska, I have seen the species from Alberta, Manitoba, Northwest Territory, and Saskatchewan, and from the States of California, Colorado, Idaho, Oregon, Utah, and Washington.

25. **Elachiptera (E.) flaviceps**, n. sp.

As characterized in the key; near *E. decipiens* but the arista slender, scarcely flattened beyond the basal segment; head with bright appearance, predominantly bright yellow, the triangle reddish tc brown; legs typically yellow, with scarcely any infuscation.

Length, 2–2.25 mm.

Type.—Male, U.S.N.M. no. 58869.

Holotype, male, Moscow, Idaho, June 2, 1908 (J. M. Aldrich). Allotype, Smith River, Calif., July 17, 1930 (Aldrich). Type and allotype in the U. S. National Museum. Paratypes: CALIFORNIA: 1 ♂, Del Norte County, May 27 [Deutsch. Ent. Museum, Berlin-Dahlem]; 2 (♂, ♀), Berkeley, June 20, 1947 (A. E. Pritchard); 1 ♂, Eureka, March 6 (H. S. Barber) [U.S.N.M.]. OREGON: 1 ♂, Hood River (Childs); 1 ♂, 5 miles west of Sisters, June 26, 1939 (Gray and Schuh); 1 ♂, Vernonia, April 23, 1938 (Gray and Schuh) [Sabrosky Coll.].

The only specimens that have been seen are from far western United States. It is possible that this is only a southern subspecies of *decipiens*. The relation to *cornuta* var. *rufifrons* Duda of Europe cannot now be determined.

Examples of this species could easily be mistaken for *Oscinella*, and would be so placed in most generic keys. Despite the slender, atypical arista, however, the presence of the usual two pairs of strongly developed fronto-orbital bristles and distinct though small marginal scutellar tubercles links the species unquestionably with *Elachiptera*.

PROCEEDINGS OF THE ACADEMY

MINUTES OF 420TH MEETING OF BOARD OF MANAGERS

The 420th meeting of the Board of Managers, held in the Cosmos Club, September 27, 1948, was called to order at 8:05 p.m. by the President, Dr. FREDERICK D. ROSSINI. Others present were: H. S. RAPPLEYE, N. R. SMITH, J. I. HOFFMAN, M. A. MCCALL, W. L. SCHMITT, F. G. BRICKWEDDE, F. M. DEFANDORF, W. N. FENTON, T. D. STEWART, C. F. W. MUESEBECK, W. W. RUBEY, W. A. DAYTON, M. A. MASON, C. L. GARNER, H. G. DORSEY, C. L. GAZIN, and, by invitation, H. E. MCCOMB, L. V. JUDSON, K. F. HERZFELD, and J. E. GRAF.

The following appointments were announced by the President:

Committee to study question of providing a more effective bond between Academy and affiliated societies: To be identical with Committee on Functions and Policies of the Academy (see Minutes of 417th Meeting of Board).

Committee on encouragement of science talent in the schools of the Washington area: M. A. MASON (chairman), A. T. MCPHERSON, B. D. VAN EVERA, and FRANK THONE.

The President also announced that L. V. BERKNER had been appointed as chairman of the subcommittee for the Engineering Sciences of the Committee on Awards for Scientific Achievement, succeeding the late HARRY DIAMOND.

The chairman of the Committee on Membership, H. E. MCCOMB, presented six nominations, five resident and one nonresident.

The chairman of the Committee on Monographs, Dr. L. V. JUDSON, reported that all galley proof for the monograph on *parasitic cuckoos of Africa* had gone back to the printer, the first quarter of the page proof had been returned, and the second quarter of the page proof was in the hands of the Committee. He announced that printing of the monograph was progressing rapidly and that it would very likely be out this year.

Dr. W. L. SCHMITT reported that publication

of the Red Book, which is now in the hands of the members, had cost more than was estimated at the last report in June and that $3,522.55 of the allowed $3,600 had been spent, leaving only $77.45 for the purchase of additional copies. Dr. Schmitt also reported that two members who had their photographs taken by Hessler for the Red Book called attention to the fact that their pictures were not included in the final publication. The Board voted to have the Academy reimburse those two members $5 each for the cost to them of having their pictures taken. The Board of Managers also expressed its gratitude and thanks to Dr. Schmitt for his work in getting out the directory. Moreover, the Secretary was asked to write a letter to Dr. GILBERT GROSVENOR expressing the Academy's appreciation for the map of Washington which was issued as a supplement to the Directory.

The Chairman of the Committee on Science Legislation, JOHN E. GRAF, reported that legislation before Congress on the proposed Science Foundation had passed the Senate but did not clear the House before adjournment, and that, owing to the volume of other matters, it was not brought up during the emergency session this past summer. To be presented before the next Congress it must now necessarily be reintroduced as a new bill.

In the absence of Chairman CRITTENDEN of the Committee on Functions and Policies of the Academy, M. A. MASON presented the Committee's report, which is here included as an appendix to these minutes.

The Board accepted the report of the Committee and recommended its publication in the JOURNAL as an appendix to the minutes of the 420th meeting. By separate vote the Board approved the new Article I of the Bylaws (to precede the old Article I, which becomes Article II, and so on) and ordered that the amendment be submitted to a vote of the Academy membership, as required by the Bylaws.

Adoption of the proposed Standing Committee on Policy and Planning, requiring an amendment to the Standing Rules, was referred to the Committee on Bylaws for definition and phrasing preparatory to its incorporation into the Standing Rules.

H. T. HERRICK was transferred to the retired list of members, effective December 31, 1948.

The Secretary reported the following deaths:

ERNEST C. ANDREWS, honorary member, formerly of the Geological Survey of New South Wales, on July 1, 1948.

HARRY DIAMOND, of the National Bureau of Standards, on June 21, 1948.

ALBERT K. FISHER, honorary member, formerly of the U. S. Biological Survey, on June 12, 1948.

FRANCOIS E. MATTHES, formerly of the U. S. Geological Survey, on June 21, 1948.

OSCAR E. MEINZER, formerly of the U. S. Geological Survey, on June 14, 1948.

HAROLD W. MURRAY, of the U. S. Coast and Geodetic Survey, on June 15, 1948.

RICHARD C. TOLMAN, of the California Institute of Technology, on September 5, 1948.

The Senior Editor, Dr. JAMES I. HOFFMAN, made a progress report on the matter of securing a new printer for the JOURNAL. The George Banta Publishing Co., because of the volume of other work handled, recently notified the Board of Editors that they would be unable to continue printing the JOURNAL. Dr. Hoffman secured bids from certain other printers, and although his conclusions could not be made definite at this time, it appeared likely that the cost of printing the JOURNAL elsewhere would be approximately 10 percent higher than in the immediate past. He expected to have more complete data and formal bids to present at the next meeting of the Board.

The meeting was adjourned at 10 P.M.

C. LEWIS GAZIN, *Secretary.*

APPENDIX

REPORT OF SPECIAL COMMITTEE ON FUNCTIONS AND POLICIES OF THE ACADEMY

APPOINTMENT AND SCOPE OF COMMITTEE

This committee was appointed on April 6, 1948, in accordance with authorization given by the Board of Managers at its meeting of March 15, 1948 (JOURNAL **38**: 188. May 15, 1948), "to study the functions of the Academy and to formulate a program that will integrate these functions, including the JOURNAL." This action was taken in accordance with one of the recommendations submitted by a Committee on the JOURNAL and its Improvement, under the chairmanship of Dr. R. J. SEEGER (JOURNAL **38**: 80. February 15, 1948). President ROSSINI indicated also that the committee should formulate an introductory article for the Bylaws setting forth the aims and functions of the Academy.

At the meeting of the Board of Managers on June 7, 1948, the Board authorized the appointment of a Special Committee "to improve the ties and relations binding the Academy and its Affiliated Societies." Since this assignment involves policies and functions of the Academy, President ROSSINI has made this new com-

mittee identical with the one previously established, and the present report deals with both subjects.

ARTICLE FOR BYLAWS

In the Act of Incorporation of the Academy its purposes are indicated by the following paragraph:

3. That its particular business and objects are the promotion of science, with power:
   a. To acquire, hold, and convey real estate and other property and to establish general and special funds.
   b. To hold meetings.
   c. To publish and distribute documents.
   d. To conduct lectures.
   e. To conduct, endow, or assist investigation in any department of science.
   f. To acquire and maintain a library.
   g. And, in general, to transact any business pertinent to an academy of sciences.

The Bylaws, however, are often reproduced without the Act of Incorporation. It seems appropriate therefore to include a statement of purposes in the Bylaws, and the committee suggests the text below as a new Article I. Its adoption would of course require renumbering all present Articles and preferably changing "The Washington Academy of Sciences" in Section 1 of the present Article I to "The Academy."

ARTICLE I.—*Purposes*

SECTION 1.—The purposes of the Washington Academy of Sciences shall be:

(a) To stimulate interest in science, both pure and applied.

(b) To promote the advancement of science and the development of its philosophical aspects, through cooperative action by the affiliated societies and by individuals.

These objectives may be attained by:

1. Publication of a periodical and of occasional scientific monographs;
2. Public lectures of broad general scope and interest;
3. Symposia, both formal and in the form of small informal gatherings;
4. Scientific conferences;
5. Awards of prizes and citations for special merit;
6. Grants of funds for special research projects;
7. Organization of, or assistance in, scientific expeditions;
8. Cooperation with other Academies and scientific organizations.

SPECIFIC ACTIVITIES (OTHER THAN PUBLICATION OF THE JOURNAL)

The committee has reviewed the various reports on activities of the Academy which have been presented during the past decade at meetings of the Academy and of the Board of Managers. It has few novel proposals to advance. In fact it believes that the Academy has done very well and has well justified its existence.

As the body of scientific knowledge has grown more vast and diverse, with corresponding pressure for specialization both among individual workers and among scientific and technical societies, the need for connecting links like the Academy has become greater. This need has been intensified by the changes in personnel and in scientific projects which have taken place in the last decade. In Washington and vicinity, in addition to changes in previously existing institutions, there have grown up several large new research laboratories. The present greatly increased interest of the government and the public in science also makes the time appropriate for active prosecution of the Academy's functions.

Meetings.—In view of the large number of meetings held by scientific and technical groups in Washington, it is recognized that the Academy can not well make any considerable increase in the number of its meetings. It is obviously desirable, however, that the Committee on Meetings give special attention to the possibility of obtaining speakers who will present broad philosophical aspects of science as well as those who represent fields of work cutting across the boundaries of the traditional divisions of science. The organization of symposia with speakers from different but related fields is another possible method, perhaps more generally practicable, for bringing together groups of members whose interests are diverse, and this is recommended.

The holding of more joint meetings with affiliated societies has been urged as a means of developing closer relations between the Academy and those societies. Undoubtedly such meetings serve also to bring the Academy to the attention of members of the societies and thus assist in gaining desirable members for the Academy. The Committee on Meetings should take the initiative in maintaining liaison with the program committees in the societies and in arranging joint meetings when appropriate speakers can be found by either committee concerned.

A problem related to arrangements for meetings is that of furthering the development of

acquaintanceship among members. Even those members who attend the meetings usually see each other infrequently. While not proposing to make a social club out of the Academy, your committee believes that definite efforts should be made to stimulate a greater degree of activity in introductions and revivals of acquaintance following the formal meetings. To facilitate this, means might be devised for tagging members with their names and connections, and the Academy might arrange a meeting of some kind once a year purely for acquaintance sake.

With regard to subjects of meetings, the history of the Academy shows a fairly good distribution over the various fields of science. W. A. DAYTON when chairman of the Committee on Meetings prepared a detailed classification of subjects dealt with from 1923 to 1943, inclusive, a total of 151 meetings. With the addition of 30 held in 1944–47, the distribution into very broad classes as set up by Mr. DAYTON is shown in Table 1.

TABLE 1.—CLASSIFICATION OF SUBJECTS OF ACADEMY MEETINGS

Class of Subject	*Number of Meetings*	*Percentage*
Biological sciences	61	33.7
Economic, historical, and social	8	4.4
Engineering sciences	13	7.2
Physical sciences	68	37.6
Awards, exhibitions, and general	31	17.1
Total	181	100.0

In the very broad class of biological sciences, however, were included 16 meetings, or 8.8 percent of the total, devoted to anthropology, archeology, and ethnology. If this group is deducted, biology filled only 24.9 percent of the meetings.

Another type of meeting which members found most interesting in prewar times was a visit to a research institution or a field trip. Such a program involves much work on the part of the hosts, but it has some compensating advantages for them. There are several laboratories or operating plants in Washington which many members of the Academy would be interested to see and which would probably not be averse to a visit in ordinary times. Just at present there would be some special difficulties, and this kind of meeting is therefore suggested as a desirable feature for some future years.

Publications (monographs).—Your committee has noted with interest the careful steps which have been taken toward publication of the monograph on *The parasitic cuckoos of Africa*, by Dr. HERBERT FRIEDMANN, this being the initial venture in a program originally approved in 1939 (JOURNAL **29**: 545–546. December 15, 1939). Caution is obviously necessary in embarking upon such a program involving considerable financial risks, but the committee believes that this is a highly appropriate activity, being one which can both serve a useful purpose for science and enhance the prestige of the Academy. The New York Academy of Sciences has apparently carried on successfully an extensive program of this kind. The Washington area should be a prolific source of specialized monographs of a kind which would not appeal to commercial publishers but which should have a sale sufficient to cover the cost of printing and distribution. From a business point of view it must be recognized that such an undertaking initially depends to a large extent upon voluntary service by members who combine good business judgment with a high degree of altruism, but the committee believes that the Academy has many such members.

Memberships.—The committee believes that the membership of the Academy may well be substantially increased in view of the growing importance of Washington as a scientific center. A considerable part of the increase of 100 in active members permitted by the recent amendment to the Bylaws (JOURNAL **38**: 188–189. May 15, 1948), may appropriately be used to round out the membership in fields and in institutions where there are disproportionately small numbers. No general campaign for new members is proposed, nor should there be any lowering of the scientific qualifications required for membership. The committee recommends, however, that emphasis be placed on taking in young men who have shown ability in original research or other scientific attainment.

The distribution of members among different branches of science is indicated to a considerable extent by the memberships held in affiliated societies as shown in Table 2 herewith, although the data supplied for the 1947–48 Directory appear to be incomplete.

The fields from which new members have been received during the past five years are shown in Table 3.

While there are some apparently significant trends shown in these tables a more important problem is presented by the tabulations of members in different organizations as given in the 1947–48 Directory. In spite of the changes in organization of the Department of Agriculture, the bureaus of that Department have maintained a good representation in the Academy, but four other great research organiza-

TABLE 2.—MEMBERSHIP OF MEMBERS OF WASHINGTON ACADEMY IN AFFILIATED SOCIETIES

(As indicated in Directories of the Academy, including both resident and nonresident members)

Affiliated Societies	Number of Memberships *1941*	*1947–48*
Philosophical	105	125
Chemical	102	97
Biological	87	76
Geological	75	74
Botanical	71	76
Engineers	28	26
Entomological	27	33
Helminthological	23	26
Medical	23	17
Bacteriological	22	28
Anthropological	18	20
Foresters	15	13
Electrical Engineers	10	13
Mechanical Engineers	6	11
Radio Engineers	5	9
Military Engineers	4	5
Historical	3	2
Archaeological	1	0
Civil Engineers	0	20
Total	625	671
No society memberships shown	58	225
Members of Academy	640	713

TABLE 3.—FIELDS OF WORK OF NEW MEMBERS 1942–47 CLASSIFIED AS IN REPORTS TO ANNUAL MEETINGS

Biological		*Physical*		*Geological*	
Botany	25	Chemistry	24	Geology	10
Entomology	13	Physics	23	Paleontology	5
Zoology	7	Engineering	10	Mineralogy	2
Bacteriology	6	Mathematics	8		—
Biology	3	Biochemistry	5	Total	17
Physiology	3	Geophysics	4		
Plant pathology	3	Geochemistry	3	Anthropology	15
Cytology	2	Hydraulics	3	Archeology	1
Ichthyology	2	Astronomy	2		—
Genetics	1	Geography	2	Total	16
Medicine	1	Meteorology	2		
Plant physiology	1	Ceramics	1		
	—		—		
Total	67	Total	87		

tions which have grown since 1940 to have hundreds of professional employees are represented in the Academy by one to three members. These are the Naval Research Laboratory, the Naval Ordnance Laboratory, the David Taylor Model Basin, and the Johns Hopkins University Applied Physics Laboratory. As the staffs of these institutions come to consider themselves really part of the Washington scene more of them should be drawn into the Academy.

Another problem which the Committee has considered, but one on which opinions differ, is the question whether the scope of the Academy should be stretched to include men working in the social sciences, particularly economics and statistics. It must be admitted that ideas and methods in these fields, and even more in other branches of sociology, are still in an inchoate state, but considering their growing influence in determining governmental policies and economic activities of the country some members of the committee believe that the Academy should be receptive to "social science." Perhaps a first step should be to devote a meeting of the Academy to some subject in this field for which qualified speakers should not be lacking in Washington.

Public policy and publicity.—One of the aims of the Academy is to get the public, including public officials, to appreciate the importance of scientific work and to give science the place which it should have in our national life. At this time when the National Government is taking so large a part in sustaining and directing scientific research it is especially important that the Congress and high executive officials should have the best possible advice on governmental policies affecting science. The location of the Washington Academy at the National Capital gives it a strategic position both for obtaining information on trends of opinion in Government circles and for supplying information and advice to those who are to determine policies. On the other hand, the fact that a large part of its members are employees of the Government lays the Academy open to suspicion of lobbying for the benefit of its own members.

In view of these conflicting considerations the committee believes that the Academy, while giving serious and active study to governmental policies affecting scientific work, should be conservative in publishing any proposals or recommendations in this field. However, the formation of study groups or committees such as that appointed last year to keep in touch with legislation on science is recommended (see reports in JOURNAL **38**: 79. February 15, 1948; and **38**: 220. June 15, 1948), and it is the opinion of the committee that the Academy should engage more actively in preparation and publication of factual studies and surveys bearing upon public policies affecting science.

Junior Academy of Science.—The committee has considered with much sympathy the proposal for the organization of a Junior Washington Academy of Science or such other related activities as the annual science fair, the science talent search, and general cooperation with secondary schools and colleges in the Washington area to stimulate interest in science among young people. This field of activity certainly has promise of great usefulness, but plans for entering upon it need to be considered with care because a vital element is the availability of

members qualified to carry on the work more or less permanently and able to give the necessary time for it. The situation is well summarized in the report of the annual meeting of January 15, 1948 (JOURNAL **38**: 220–222. June 15, 1948). It may be significant that the report indicates the temporary suspension of the Junior Academy in Maryland for lack of a director.

THE JOURNAL

As a basis for considering the status of the JOURNAL of the Academy and determining the policies to be adopted for the future, it is desirable to review reports on past issues. Recent annual reports of the editors and an examination of the 1948 numbers of the JOURNAL give the following data for the postwar period:

TABLE 4.—PERCENTAGE OF PAGES OF JOURNAL DEVOTED TO VARIOUS FIELDS OF SCIENCE

Subjects	*1945*	*1946*	*1947*	*1945* (6 mos.)
Biological	53.4	41.4	53.8	36.0
Physical	7.1	18.2	8.3	38.8
Anthropological	23.8	26.4	20.1	5.9
Geological	5.4	5.6	2.7	2.7
Other (misc.)	0.8	2.2	4.2	2.7
Obituaries Proceedings Notices	8.5	5.3	10.0	12.8
Index	1.0	0.9	0.9	1.0 (assumed)

The distribution so far in 1948 is abnormal because some long papers in physics happened to be included in two of the numbers. A breakdown somewhat more detailed and showing trends in specific subjects over a period of years has been made in Table 5 by listing papers (not *pages*) for the last three 5-year periods.

TABLE 5.—NUMBER OF PAPERS IN VARIOUS FIELDS AS CLASSIFIED IN JOURNAL INDEX

(Abstracts in society proceedings not included; also subjects which averaged less than one paper per year are omitted.)

Subject	*1933–37*	*1938–42*	*1943–47*	*Total*
Anthropology	1	7	7	15
Botany	79	66	50	195
Chemistry	20	18	3	41
Entomology	27	37	55	119
Ethnology (incl. linguistics)	3	1	38	42
General (history, etc.)	7	6	5	18
Geology	23	10	3	36
Ichthyology	2	14	20	36
Ornithology	8	7	13	28
Paleobotany	27	17	4	48
Paleontology	36	30	11	77
Physics	20	11	11	42
Zoology	90	52	55	147

It should be noted that this tabulation exaggerates the preponderance of biological papers because those papers quite uniformly average less than half as long as those in physical sciences. Averages for a number of years are as follows: Biological, 4.5 pages; physical, 10.5; anthropological, 8.0; geological, 5.0; other papers, 8.0. This systematic difference in length of papers in the various fields arises from differences in character of the papers, which in turn arise from the distinct purposes which the JOURNAL serves for the various sciences. In biology it provides a place of quick publication for notes on new or redescribed species and other taxonomic papers; in the physical sciences the papers are usually of broader type, many of them being authoritative and comprehensive surveys or summaries of the status in given fields of science or engineering. Both of these classes are useful, and in publishing them the JOURNAL performs a valuable service. The two classes naturally appeal to different groups of readers; in any journal covering so many diverse fields any one reader must expect to find many articles which are of no interest to him, but this fact does not justify a low rating for the journal.

Nevertheless it should be possible to make the Academy JOURNAL more interesting for the general reader by carrying out the recommendation made by the special Committee on the JOURNAL and Its Improvement that the Editors "be continuously vigilant in seeking papers of general interest, in securing copies of outstanding Academy papers, and in selecting papers from different fields for any particular issue" (JOURNAL **38**: 80. February 15, 1948). A suggestion supplementing this recommendation is that the JOURNAL might obtain more presidential addresses as delivered before affiliated societies.

The Boards of Editors have repeatedly surveyed the situation of the JOURNAL and made recommendations for its improvement. (See, for example, JOURNAL **33**: 113. April 15, 1943; **35**: 234. July 15, 1945; **37**: 441. December 15, 1947; and **38**: 218. June 15, 1948.) The Editors have repeatedly pointed out that only about one-half of the papers published in the JOURNAL are written by members of the Academy. The committee would recommend that good papers be accepted or sought without regard to membership of the authors. In brief, publication of articles in the JOURNAL should be considered as marking possible future members, rather than having membership considered a desirable prerequisite for acceptance of papers.

RELATIONS WITH AFFILIATED SOCIETIES

As a first step toward finding ways "to improve the ties and relations binding the Academy and its affiliated societies" in accordance

with the action of the Board of Managers on June 7, 1948, the Committee has sought advice from the Vice-Presidents who represent the affiliated societies in the Board, and has already received cordial replies from two-thirds of them.

It is especially noteworthy that a majority of the Vice-Presidents replying have suggested more meetings arranged jointly by the Academy and the societies. The records of meetings in the annual reports for the past 16 years show considerable fluctuations in the proportion of joint meetings. Out of an average of about seven meetings per year the number reported as jointly arranged has varied from none to a maximum of five in one year, the average being only a little more than one joint meeting per year. One specific suggestion is that the meeting of the Academy at which the address of a retiring President is delivered be arranged as a joint meeting with the Society which represents the major scientific field of the retiring President.

Several of the Vice-Presidents have also mentioned the desirability of getting announcements of Academy meetings to members of affiliated societies who are not members of the Academy. Possible procedures suggested include purchase of announcement cards by the individual societies and reports to the respective societies by the Vice-Presidents representing them in the Board. The expense involved in the one case, and the long advance notice needed in the other, make it questionable whether either of these plans can be worked effectively.

In fact, this problem of informing diverse groups of the many scientific or technical meetings which might interest them is one which affects other bodies in addition to the Academy. The plan which seems at present to give most promise of solving it is the Academy's joint effort with the District of Columbia Council of Engineering and Architectural Societies to have a weekly calendar of meetings published in the local newspapers. (See JOURNAL **37**: 412. November 15, 1947; **37**: 444. December 15, 1947; and **38**: 255. July 15, 1948.)

In considering relations with affiliated societies the question arises whether there may now be additional societies in Washington which should be affiliated. The Committee is not prepared to make any recommendation on this point, but for reference would direct attention to the careful study of this question made shortly before the war (JOURNAL **30**: 46–47, 448, 534. 1940).

RECOMMENDATIONS

Your Committee believes that establishment of policies and detailed planning for their execution over a period of years should be a responsibility of a continuing group. The general responsibility and authority, of course, rest with the Board of Managers. However, the Board as a whole is a rather large body to deal with details, and the present Committee recommends that the Board consider the establishment of a standing Policy and Planning Committee of six members appointed for overlapping 3-year terms and including members who have had experience on the editorial board of the JOURNAL.

Summarizing other recommendations and suggestions in the preceding text we propose the following:

(1) The text of a new Article I of the By-laws;

(2) Meeting directed toward (a) correlating diverse traditional fields of science or (b) dealing with subjects in a broad way so as to be of general interest;

(3) More meetings arranged in cooperation with affiliated societies, and more adequate advertisement of meetings;

(4) Special attention to promotion of acquaintanceship among members, both of the Academy and of affiliated societies;

(5) Further trial of the plan for special publications;

(6) Expansion of the membership especially to get more adequate representation from new laboratories and with emphasis on attracting promising young men;

(7) Study of public policies and governmental actions affecting scientific work, and publication of factual reports on these subjects;

(8) Promotion of interest in science among young people, as for example, by supporting the establishment of a Junior Academy of Science, provided a sufficient group of members appears likely to take a continuing interest in this undertaking;

(9) Efforts to develop the JOURNAL along lines already recommended by the special committee on that subject; and

(10) Collaboration with all other organizations interested in the promotion of science and its application, even taking a sympathetic attitude toward the development of the so-called "social sciences."

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